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An Address
ON
THE ALLERGIC CONCEPTION OF RHEUMATIC FEVER*†

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THE etiology of the symptom-complex included under the term rheumatic fever has been much discussed for many years. By numerous observers some streptococcus has been accepted as the causative agent, but until recently no plausible explanation has been advanced for the differences which exist between subacute bacterial endocarditis, which is known to be usually due to *S. viridans*, and acute rheumatic fever, which is suspected of being caused by similar micro-organisms. Recently, the idea that rheumatic fever in its various manifestations is an allergic response on the part of the individual to certain streptococci has been gaining support.

Several years ago in the Trimble Lecture, given at Baltimore, one of us[1] drew attention to certain similarities between this disease and tuberculosis and syphilis. At about the same time similar views were presented in France by Bezançon and Weil.[2] Recently[3] a more extensive correlation has been made. In all three diseases there is usually an initial lesion with local lymph-node involvement; *e.g.*, the chancre in syphilis, the primary tubercle in tuberculosis, and the tonsillitis, sinusitis or similar infection in rheumatic fever, although the real damage occurs at distant points and frequently is multiple. There is a tendency for both rheumatic fever and tuberculosis to occur in families and the incidence of both is lessened by bettering the hygienic conditions.

All three diseases tend to have relapses, which in the instance of syphilis and tuberculosis are probably expressions of alterations in states of immunity. The histopathological picture of a typical lesion of each is that of a granuloma, which in the case of tuberculosis and syphilis has been definitely shown to be an allergic response on the part of the tissues, probably an effort to localize the injurious effect of the causative virus. Each on the other hand calls forth a characteristic response depending somewhat upon the tissues involved; but any two of them may incite nearly similar responses in the same tissue, *i.e.*, rheumatic and tuberculous lesions in the walls of the serous cavities and joints produce serofibrinous exudates; rheumatic fever and syphilis both tend to involve the blood vessels, including the heart. Although these responses are not identical, it is at times difficult to distinguish one type of infection from the other without specific differential diagnostic aids.

Many workers have tried to reproduce typical rheumatic fever in laboratory animals, but without success. Instances of this are the contributions of Faber[4] and of Swift and Boots.[5] Faber claimed to have sensitized the joints of rabbits by injecting killed organisms directly into their joints and then, after an interval, to have produced acute sterile arthritis by the intravenous injection of living streptococci. He was able to do this with streptococci only. He spoke of a direct sensitization and made no mention of general tissue sensitization.

In repeating this work Swift and Boots[5] were unable to demonstrate a condition of specific

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joint sensitization with non-hæmolytic streptococci or with their extracts, and found that the treated joints were no more liable to involvement than were untreated joints of the same animal. They pointed out at that time that their experiments dealt only with the question of local joint sensitization; but that a state of general hypersensitiveness in an animal would probably result in a severe arthritis if the specific sensitizing agent were introduced into a joint.

Swift and co-workers[6, 7, 8] were unable to reproduce the disease in animals by injecting them with materials likely to harbour the virus and obtained directly from patients suffering from rheumatic fever. Many workers have reported the isolation of streptococci from the blood and tissues of patients with this disease, both during life and at autopsy. These efforts were reviewed by Swift and Kinsella,[9] who themselves were able to grow streptococci from the blood stream of about 10 per cent of their cases during life, and from the active endocardial lesions in about half the fatal cases of acute rheumatic fever. They directed attention to the heterogeneity of the streptococci recovered by them. The recent report of Zinsser and Yu,[10] who recovered streptococci from the blood of one patient during life and the heart and spleen or both of three others at autopsy, also indicates marked heterogeneity of these strains. The frequency with which streptococci have been recovered in blood cultures or from the affected joints during life has varied widely among different observers, but is usually quite low. When studied carefully the streptococci recovered have fallen into several types both culturally and immunologically.

A very satisfactory method of studying allergy to streptococci[11, 12] has been provided by the observation that when rabbits are inoculated intracutaneously with certain strains of *S. viridans* there follows a complete change in their tissue reactions closely resembling that of tuberculin allergy.[13] It has also been demonstrated[14] that a similar state of hypersensitiveness can be induced with certain strains of indifferent streptococci, similar to those recently brought into prominence by Small[15] and by Birkhaug[16] and claimed by them to be the specific causative agents of rheumatic fever. The hyper-reactivity of the tissues can be demonstrated by at least three different tests, (1) cutaneous, (2) ophthalmic, and (3) lethal.

When a normal animal is inoculated intradermally with suitable amounts of one of these strains there is an immediate reaction which decreases or disappears in from 3 to 5 days. On about the 7th to the 12th day there is a recrudescence of signs of inflammation at the site of inoculation, which often becomes as marked as the immediate reaction. Following this, all of the tissues show a heightened state of reactivity.[13] If such an animal is reinoculated intradermally at suitable intervals it shows an increasing degree of reaction to the same sized dosage, and in addition well marked lesions following the inoculation of as little as 0.0001 c.c. to 0.000001 c.c. of blood broth culture, amounts which rarely produce any visible lesion in normal animals. These lesions bear a marked resemblance to those of lupus vulgaris or to nodular syphilides, especially as to colour. If now the anæsthetized cornea of one of these animals is lightly scarified and a small amount of this culture is instilled into the conjunctival sac, there follow within a few days a well marked conjunctivitis and keratitis, depending in intensity somewhat upon the degree of hypersensitiveness of the animal and also upon certain characteristics of the culture. This reaction may persist for from a few to as many as fifteen days. Normal rabbits practically never react macroscopically to a similar treatment of their eyes.

When hypersensitive rabbits are inoculated intravenously with these organisms in doses quite innocuous for normal animals, they become sick and many of them die within 20 to 48 hours. At autopsy they show enlarged and hæmorrhagic lymph-nodes and thymus, also hæmorrhages into the lymphoid patches in the intestines, into the bone marrow and often into the heart and lungs. This whole picture closely resembles that of tuberculin shock in animals. This hypersensitive state is not strain-specific, and can be demonstrated by employing not only heterologous strains of green streptococci but also strains of the indifferent variety mentioned above. This crossing depends to some extent upon the degree of hypersensitiveness of the animal; partly also upon the fact that not all strains are efficient allergizing agents, and vary correspondingly in their capacity to elicit

phenomena of hyperergy in previously sensitized animals.

Whilst it is true that this state has been produced most easily by intracutaneous inoculation, it can also be induced by injecting the micro-organisms into other tissues, *i.e.*, testicle, muscle, serous cavities, or the para-nasal sinuses. If, however, the organisms are introduced by the intravenous route the animal fails to become hypersensitive or to show ophthalmic or lethal reactions.[17] It is no longer a normal animal, however, for when inoculated intradermally it shows smaller and harder lesions with moderate sized inocula, and often no reaction at all with the smaller inocula which produce lesions in normal animals. This type of response we have designated as the immune. Thus, three different states can be demonstrated by the characteristic types of skin reaction: (1) normal, in which the lesion is of medium size and shows considerable œdema; (2) immune, in which the lesion following similar doses is small, firm, nodular and with little or no œdema; and (3) hypersensitive, in which the lesion is large, soft and usually markedly œdematous, even with much smaller doses.

Histologically, the type of cellular response varies markedly in these different lesions. It appears that the hypersensitive animal puts forth a maximal response to cope with a minimal insult, whereas the immune animal shows but a minimal response against a maximal stimulus.

This hypersensitive state can be maintained or augmented not only by repeated intracutaneous injections but also by the presence of a suitably infected agar focus in the subcutaneous tissues. If continued stimulus is not applied this state gradually diminishes and in the less sensitive animals disappears, so that after an interval of about nine weeks the reactions are those of a normal animal. In the more highly sensitive rabbits the rate of this return towards normal is greatly diminished. Highly sensitive animals can be carried over to the immune state quite readily by suitable intravenous immunization.

When one carries the ideas gained from these experimental findings into the clinic, it is possible by analogy to picture rheumatic fever with its early exudative, followed by later proliferative, phenomena as being a hypersensitiveness on the part of the body to streptococci or to some of their products, and subacute bacterial endocarditis, with little exudative and more marked proliferative type of reaction, as an immune response on the part of the body.[18] Strikingly parallel with our hypersensitive rabbits, most or all patients with rheumatic fever show active foci of infection usually about the nose or throat in the form of chronic tonsillitis, sinusitis, or other infection of the upper respiratory tract. It is probably from these foci that the sensitizing substances, either bacteria or products of bacteria, together with broken-down tissue proteins, are disseminated throughout the body to induce and maintain the hypersensitive state. Given then an individual in this condition, with some tissues more sensitive than others, or with anatomical peculiarities, in heart, joints, subcutaneous tissues or brain, it may only be necessary to have an acute precipitating cause as, for instance, an acute tonsillitis, pharyngitis or bronchitis. Such an infection practically always antedates an attack of rheumatic fever by a few days or weeks, and we may then have the proper setting for some or all of the manifestations of this disease, such as carditis, arthritis, subcutaneous fibroid nodules or chorea, depending upon which tissues are involved. There are indubitably many other factors which play important rôles, as to which manifestations will be most marked in any case; age of the patient, physical stress and strain in organs or parts of the body most used and most subject to trauma, climatic conditions, and other deleterious influences.

A number of workers have recently reported that patients with rheumatic fever show marked skin reactions following intradermal injection of certain products of streptococci. Birkhaug[16] and also Kaiser[19] used filtrates of indifferent streptococci. Mackenzie and Hangar,[20] in testing a series of patients with filtrates and extracts of both hæmolytic and green-forming streptococci, found that many showed cutaneous sensitiveness, but felt that this was a function of age rather than a characteristic of any particular disease. However, it is of interest that many of their most reactive patients were suffering from rheumatic fever. Similar findings have recently been reported by Irvine-Jones,[21] who employed filtrates from all three types of streptococci. In testing out our patients at the Rockefeller and New York Nursery and Child's

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Hospitals, Swift, Wilson and Todd[22] found that the majority of those with active rheumatic fever reacted strongly to filtrates of both indifferent and green-producing streptococci. We have also observed that most patients react to nucleoprotein extracts from all types of streptococci, particularly the hæmolytic variety. Those patients with the severer forms of the disease, such as marked carditis of some duration, or with subcutaneous nodules, showed the most intense reactions. Amongst patients suffering from such other diseases as pneumonia, chronic nephritis, or non-rheumatic myocarditis, neither the frequency nor the degree of reaction was comparable; but as some of these patients with other diseases did react to some extent, this type of skin response cannot be considered diagnostic of rheumatic fever. This conclusion was foreshadowed by the results of Mackenzie and Hangar.[20]

When these sensitive patients are tested with intravenous injections of very small doses of nucleoprotein extracts or of vaccines, they show delayed febrile and other reactions very similar to those shown by tuberculous animals or by tuberculous patients following a tuberculin test.[23] The degree of reaction following such an intravenous vaccination corresponds roughly with the degree of cutaneous response, and also with the severity of their rheumatic infection.

If now the intravenous injections are continued with increasing dosage, either of the nucleoproteins or vaccines, it has been found that with many patients the sensitiveness diminishes. This is indicated by the lessening of the febrile response, slowing of the pulse rate and also eventually by diminution of the skin reactivity. This is quite comparable with our laboratory observation that it is possible to decrease an animal's hypersensitiveness by suitable intravenous injections of streptococci or of their nucleoproteins. These results of intravenous vaccination in rabbits are quite noteworthy when contrasted with those obtained by cutaneous or tissue vaccinations, for, as noted previously, repeated cutaneous inoculations served to maintain or heighten the animals' hypersensitive state.

Somewhat analogous to this conception of rheumatic fever is the theory of Escherich and Schick[24] that the late complications of scarlet fever are allergic in nature. Among the chief complications, in addition to nephritis, are polyarthritis and verrucous endocarditis, markedly resembling those of rheumatic fever. It is known that an attack of scarlet fever in a patient who has previously had rheumatic fever is very apt to engender a fresh endocarditis. This is probably due to an active or acute stimulation of previously sensitized tissues resulting in endo- or myocardial damage. Histological lesions somewhat similar to Aschoff bodies have been found in the hearts of patients dying from scarlet fever. Fahr[25] has stated that these differ from Aschoff bodies only in that they fail to show giant cells; and, furthermore, that in patients succumbing to rheumatic fever myocardial lesions can be demonstrated identical with those found following scarlet fever. These findings may possibly be explained by the difference in duration of the two diseases. Pappenheimer and von Glahn[27, 26] have reported instances of rheumatic lesions where polymorphonuclear leucocytes and small mononuclear cells were as frequently present as were Aschoff-body cells. This has also been our experience in a few patients who have died early in the course of this disease. There is in addition a marked tendency to œdema in and about these more acute lesions.

Our experimental demonstration that the hypersensitive state fails to show strain specificity may serve to account for the pathogenic rôles of the different streptococci which have been recovered from the blood and tissues of rheumatic fever patients. Again, we have occasionally isolated two different strains from the same patient both from autopsy material and from subcutaneous nodules removed at biopsy. This has been a common finding with other workers as instanced by the recent report of Zinsser and Yu.[10] In the past this heterogeneity of the strains isolated has been a stumbling block in the way of acceptance of any hypothesis of the streptococcal etiology of rheumatic fever.

Dochez and Stevens,[28] and more recently Birkhaug,[29] have reported that there are two types of hypersensitiveness to streptococci; one to a neutralizable "toxin," and the other to some other bacterial product which is not neutralizable. Zinsser and Grinnell[30] and others have obtained sensitization of the second type in suitably injected guinea pigs, and in some in-

stances this sensitiveness has not been strain-specific. Birkhaug[29] also claimed to be able to produce in animals both types of hypersensitiveness to filtrates of various streptococci, and during the first stage to be able to neutralize "toxic filtrates" with immune sera. In a limited number of tests[31] we have found it impossible to obtain similar neutralization in patients suffering from rheumatic fever; rather the contrary, for the mixtures of immune serum and filtrates sometimes gave more marked reactions than did the filtrates alone. Thus the hypersensitive state of the patients is more comparable to that induced by whole bacteria than to that induced by a neutralizable "toxic filtrate." Zinsser,[32] who also holds that rheumatic fever may be an allergic disease, and who suggested several years ago[30] that arthritis might be allergic in nature, thinks that the antigen which induces the allergic state and which precipitates the arthritis is an autolytic product of streptococci. As evidence bearing upon this point he cities experiments performed by him and Grinnell[33] with autolysates of pneumococci.

A somewhat similar concept of the allergic nature of rheumatic fever was advanced by Menzer[34] in 1902 in an endeavour to explain the peculiar action of his serum in rheumatic fever. He prepared sera by immunizing horses with different strains of streptococci recovered from rheumatic fever patients. Later,[35] however, he concluded that any beneficial effect was due to non-specific protein stimulation. Weintraud,[36] also, in 1913, thought that rheumatic fever corresponded with the type of hypersensitiveness seen in serum disease. Although these two diseases have features in common they also have others which clearly distinguish them one from the other.

Whilst it is easy to explain many of the manifestations of rheumatic fever as allergic reactions, it is not possible at present to state why all individuals sensitive to streptococci do not have rheumatic fever. However, a similar condition is found in tuberculosis. It is quite probable that in addition to the state of the tissues other unknown factors play a part in determining which individuals shall manifest the disease.

The suggestions, therefore, for the treatment of patients with rheumatic fever which we have been able to formulate from our investigations both in the laboratory and the clinic are not only to eradicate foci of infection when these can be found, but also to attempt to carry the patient from a hypersensitive to an immune state. It should be remembered, however, that at present this is only a working hypothesis which still requires much investigation to test fully. The high degree of hypersensitiveness of many of these patients makes it necessary to proceed cautiously when antigenic substances are introduced intravenously.

In conclusion, we present a conception that the pathogenesis of rheumatic fever can be explained by the existence in certain individuals of a condition of hypersensitiveness (allergy) to streptococci resulting from repeated low grade infections or from the persistence of foci of infection in the body. When under suitable circumstances streptococci or products of streptococci are disseminated to the tissues these tissues over-react and the characteristic picture of the disease results.

When, on the other hand, there exists a condition of immunity or of normality, in contradistinction to this peculiar hypersensitive state, the dissemination of streptococci results in a minimum of injury to the tissues and the characteristic phenomena of the disease fail to appear.

DISCUSSION

Dr. Howard: Many years ago I was very much interested in the subject of acute rheumatic fever. Many sufferers from this condition used to present themselves in Osler's clinics, but much to my disappointment, all our cultures of the blood and joints proved absolutely negative.

It was only when the work of Swift and Winternitz was presented that we saw the explanation of the failure of so many of us in the past. I have heard any number of causes of rheumatic fever put forward, but I was only more or less convinced until to-night. I am now convinced that in some way or other a streptococcus is behind rheumatic fever.

Dr. Gordon: It is certainly interesting to consider the analogy of rheumatic fever to tuberculosis and syphilis and smallpox, and as the evening passed on I was convinced from Dr. Derick's proofs that the allergic state does exist in rheumatic fever. It is a good many years since Dr. Christian brought out his paper on allergy in which he brought out a foreword on the subject of smallpox, and it would seem a long jump between smallpox on the one hand and vaccine in the consideration of symptoms of rheumatic fever on the other, but certainly the paper which we have heard to-night and the resemblances brought out have taken this work beyond the experimental stage.

One question in connection with the allergy to streptococcus has arisen in the extraordinary difference between what goes on in the joints in the body type of rheumatism and the constant invading of the heart in mitral stenosis; the two things seem so extraordinarily different in their manifestations that one would almost

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wonder how the question of allergy would apply to both. I suppose there is a reason. We may imagine that, under water as it were, frequent attacks upon the endocardium are occurring in the same way as the attacks upon the joints, but as it is occurring under water, that one we do not recognize, while the other we do. Whether these manifestations in the endocardium take the same quality and character as do the ones which occur in the joints is a question.

Another question I should like to ask Dr. Derick is whether salicylate has given the same results in the treatment of rheumatic fever with a cardiac focus as it does when the foci are in the joints. Also, is it known whether the drug has any inhibitory effect upon the allergic condition when it occurs in the heart?

Another question is this. I presume from Dr. Derick's remarks that he would form an analogy between this allergy and such foci as tonsillar infection, or a sinus infection, from which degrees of rheumatism, so-called, might occur. I wonder if he has any facts on the occurrence of such foci in people with rheumatism as compared with the occurrence of these foci in the ordinary population. Another difficulty which arises for most of us is that a large number of people are affected by chronic infections of the sinus and apparently but a small proportion of these people develop acute rheumatic fever or other rheumatic manifestations, but in many of them there does occur such things as infectious arthritis. I wonder if he would be able to throw any light on these conditions. We are likely to see the things which are known to us, but sometimes we miss certain things because we have not got very close to a knowledge of what is actually going on. Now the question is, is infectious arthritis commonly a complication which may be found in chronic sinusitis or chronic tonsillitis? On the other hand, in many cases of rheumatic fever there are no foci, or at least one fails to find any such foci, in the sinus or tonsils. I should be very glad indeed if Dr. Derick could throw some light on this subject.

Dr. Derick: I do not know that I can answer any of the questions satisfactorily. We think we know the answer to some of them, but are not yet sure. As to the difference in the joints and the heart, the only way we can explain that is that usually when the joint is affected you get a very painful joint, which you put at rest and you can keep it completely at rest, whereas it is impossible to keep the heart completely at rest; the heart is rapid, usually very irritable, and we assume that where the lesion is in the heart it is overworked and does not get a chance to heal in the same way as the joints do. From what we know at the present time of lesions in the heart and of lesions in the joints, you get the same type of lesion; if you excise the joint capsule at different stages, the lesion is practically the same as the lesions which you get in the heart. I have taken some of these lesions to Dr. Sabin, along with a section that had heart muscle in it, and she could not tell the difference. Some of these lesions in rabbits are similar histologically to types of miliary nodules in rheumatic fever.

As to the value of drugs in cardiac cases: In going over the cases that were treated we could never feel sure that they had any direct value in treating cardiac cases. We, of course, could not explain that and did not attempt to or at least havn't as yet, why the drug is not so valuable in heart cases, unless it is due to the heart having to function continually and the joints can be put at rest. We value the drug in heart cases only because it slows the pulse and lowers the temperature when it has risen. With salicylate you can always lower the temperature. It need not be a temperature from rheumatic fever, but any rise or elevation of temperature can be lowered by this drug. When the temperature comes down ordinarily the heart slows somewhat, and therefore we frequently use it. In that way at least it is probably a helpful procedure. We feel, of course, and our whole conception of these different lesions in rabbits is that they are due to foci of infection. We found it common history that practically all patients with rheumatic fever have chronic foci. More than 50 per cent of them undoubtedly have acute attacks on top of the old chronic attacks. Dr. Gordon's observation that in patients with sinusitis it is more common to get an infectious type of arthritis than rheumatic fever is hard to explain. We have not attempted any explanation of this common condition of infectious arthritis, diagnosed as such in elderly people. Where the arthritis occurs in younger people, up to thirty at most, we have assumed that that trouble has a lot to do with the infection. One reason the heart is not so frequently involved in older people in rheumatic fever is because the valves of the heart are much less susceptible because much less vascular. It has been shown by injection that younger individuals' valves are most vascular, and as age goes on they become less so. The more vascular valves are, of course, the more attacked they are, in rheumatic fever; the mitral valve, for instance. The valves on the right side, which are less vascular, are the least likely to be attacked in rheumatic fever. One other difficult thing to explain is, assuming that they are both much the same thing and a condition more of the age of the individual and his anatomy, why does the infectious type of arthritis not respond to drugs in the same way as rheumatic fevers do. We have been unable to explain this.

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An Address
ON
WHAT SHALL I DO ABOUT IT?*

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IT is only reasonable to suppose when such a question is asked as between people having our common interests that the answer shall bear in some way upon the calling which we have undertaken. The question, so far as it concerns us, is first asked by a boy or his parents when the problem arises of that boy taking up, or not taking up, medicine as a vocation.

"What shall I do about it?" That you are all here tonight suggests that as for yourselves you know what you are going to do about it. If you do, all right, go to it, and good luck to you! But among those who listen to me there may be those who after a summer holiday flirtation with the goddess Medicine came down to earth and found themselves engaged.

You were attracted to her because she didn't worry you with classics or mathematics, or because there was a certain mystery about the dissecting room, or because you had seen worldly wisdom exuding from a fourth year man like spruce gum from a forest monarch, or because the doctor in your own home had excited your envy, along with the locomotive engineer and the policeman. For these or for similar reasons you decided to take up the study of medicine and committed yourself to a career which will skim the cream off your youth, take from you the seven best years of your life, and at the end of this time will either have left you in debt or will have dissipated your patrimony, and will have dropped you down among your fellows with a piece of paper which says—"If you work hard day and night, if you keep your health and keep sober, you have a chance after a few years to make a living, perhaps later a very good living." What are you going to do about it? The answer is in a line of Kipling's:

> "If England was what England seems
> And not the England of our dreams
> How quick we'd chuck her,—but she ain't."

If there are no dreams mixed with your attachment to the serpent goddess; if you see in medicine no visions of work in which you can be happy; if there's no glimmer of something to be found which no one yet has seen; if sick people and sad people and poor people don't interest you, except for what you can get out of them; if there is no "long trail awinding to the place where dreams come true;" if the vocation of medicine looks to you like a respectable calling which will give you a certain social status and a certain grade of income; if you have taken it up because someone else wished you to; and if any other line would be just as good; then you are wasting those irreplaceable years and you are making a horridly bad bargain;—and what will you do about it? A bad engagement is best broken off before it is too late. Wire home tonight for one more remittance and take the first train to where you can get an honest job, in which work commences at 8.30 a.m. and ends at 5.30 p.m. with regular pay each fortnight, with no night work, and no seven-year contract.

But if you see the light ahead, dim perhaps, but visible, which tells the truth to yourself, that you have come into medicine as a vocation and not as an occupation only; if you can tell yourself that Medicine and none other is for you, to have and to hold till death do you part; then forget the seven spent years, forget the spent money (if you are permitted to) forget the lean years that follow your graduation, and go ahead "regardless." If, in spite of this

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vision, your mental equipment isn't powerful enough to carry you over the grade, you don't have to ask "What shall I do about it." That is settled for you. Examinations, which are otherwise but a hideous ordeal, do offer in mercy a switchback to those whose limited engine power compels them to run backward down hill. They are sidetracked long enough to discover that either a good engine has been badly treated, or that at its best the engine can't climb the hill. They can then go safely back to the starting point and take another course for which nature fitted them. Vision and capacity don't always go together. The man with the vision has a right to his chance; the one with capacity but without vision is not the man for medicine. The union of vision and capacity made an Osler and a Lister.

Having got well on the road towards a medical degree you ask concerning your place of settlement in practice. "What shall I do about it?" Perhaps one might first tell you that in almost every country now a college degree alone will not permit you to practise your profession. You must conform to the Provincial, Dominion, Empire, or State laws, and these nearly all differ from each other. It is surprising how many men come to the end of their college course and find that the place they have had their eyes on has a sign over it in the form of a Provincial law which says "No Parking Here," and they must move on. Make yourself immediately familiar with the regulations which prevail in the places in which you plan to settle, especially as these regulations bear upon matriculation and registration. In any case you should make sure that you have satisfied the requirements for entering upon the study of medicine in the Province which is your home.

Having graduated from the medical school, the question will arise of taking a hospital appointment or of going immediately into practice, and you ask "What shall I do about it?" To my mind there is no question about it. If you can get a hospital appointment jump at it, in a teaching hospital if you can, but in a hospital anyway. "Tell it not in Gath nor publish it in the streets of Askalon" but medicine is much more an art than a science, and your head may be full to bursting with "How to do things," but you are ignorant, hopelessly ignorant, until you *do* them, not once nor twice but time after time, and the year in which a man may multiply his wisdom, even by forgetting some of his knowledge, is the year he spends as a hospital interne doing the things that the year before he learned about. So if you have to beg or borrow the money to permit of a year at least in a hospital, don't hesitate; it is important enough even to work for it. If it comes to stealing the money—I can see where that might not always be advisable.

Having finished one's hospital term the question of specialization will arise and you will ask "What shall I do about it?"

There is no better place or time than an internship to decide that question. A man there discovers that he has likes and dislikes, that he has an aptitude for this but not for that. Sometimes he is told very forcefully by his chief what his aptitudes are not, but even chiefs are not infallible, though sometimes they may save a young man from ruin. I was once saved from becoming a surgeon by the late Dr. Shepherd who was my chief, and who was direct to the point of brusqueness. After giving me a thumbnail sketch of each of my predecessors, he turned to me and said "you are this, and that, and the other, but you *haven't got the surgical instinct.*" That remark answered my question of "What shall I do about it," and I tremble to think of what he saved me from as well as what he saved the community from.

It will happen to most of you that, having had your experience as an interne, the question "What shall I do about it" will be answered by an opportunity to enter practice, and having settled down and put up your modest sign there will come many searchings as to "What shall I do about it."

The first concerns your medical neighbours—*neighbours* is a much better word than *competitors.* It is a bad thing to think too highly of yourself, Dr. A. B., but it is a good thing to think highly of your craft, because it is a very honourable one; and it is well to think of your fellow craftsmen as the intelligentsia of medicine in the locality, and for that reason do your utmost to form an alliance with them, or with him, as the case may be. I admit with shame that this alliance is more honoured in the breach than in the observance, and there are reasons.

If you buy a pound of tea from grocer No. 1 and again buy tea from grocer No. 2, there is no cause for petulance, because that transaction is strictly impersonal. But, if someone receives medical services from Doctor No. 1 and then turns to Doctor No. 2, he has not only dispensed

with the *services* of the one but he has dispensed with the *ego* that out of his own personality produced those services, for in the practice of medicine the man goes with the services, and thus affronts to that ego are constantly occurring. It requires a great degree of charity and of broadmindedness to be able to separate the one from the other, and if two men are in the same place these causes for friction constantly arise, and men of the same mind and of the same craft, who should be blood brothers, become embroiled in a blood feud.

As soon as you have settled, or before that, call upon your confrères in the same region, and carry with you an olive branch in your hand instead of a chip on your shoulder, and, may I whisper it, call as a young man upon an elder, for a touch of deference is here not out of place. Your skill and knowledge may be much greater than his or theirs, but this is not the time to announce it. It is not necessary for you to proclaim that you are going to abide by all the rules of the game; that is better advertised in your actions of the next few months.

This brings us to the difficult subject of those "rules of the game" which are better known under the name of "Medical Etiquette."

While the war was on, and while many of my confrères were overseas, I was deputed for a time to serve His Majesty in a quiet section of Canada, and that is as close as I ever got to active service. This experience never made me a soldier, but it opened up to my eyes quite an unusual book, the authorship of which is unknown or unacknowledged. It is known as K. R. & O., or King's Regulations and Orders, and contains what appears upon the surface as a vast amount of foolishness and an unnecessary array of red tape, purposely spread to prevent anything being done except by the most roundabout method. Take, for instance, the example of a soldier discovered to be drunk, an occasional and regrettable circumstance.

It would seem to most of us reasonable, if tried he had to be, to try him soon and get it over, but K. R. & O. decides that he be confined overnight by an N. C. O. and brought before an officer in the morning. The reason for this is founded on experience. Since "in vino veritas," and if brought while drunk before an officer, his unvarnished opinion of that officer, expressed in the language of inebriation, might make a sound like mutiny, and mutiny is the unpardonable sin in the army. So what one might regard as the reddest of red tape is actually the outgrowth of long experience in diminishing friction and avoiding difficulty.

Using the analogy of K. R. & O., this red tape of medical etiquette actually works to the advantage of both doctor and patient. Let us take a few examples. You have been in your new office six days, six weeks, or six months, and a patient walks in. "What shall I do about it?" I think it is presumed that given a man in good health all doctors start at scratch, and if he is able to get to your office he is your lawful prey, but, if you are called to his house and find him ill it is right that you should make tactful inquiry as to whether any other doctor has been in attendance, and, if there has been, your duty is to communicate with the other physician and find out whether he has given up the case. If you find that he is still attending the patient you should retire unless requested by him to continue. Many times a patient who calls you in will say that his previous physician is no longer in attendance. This may be true, or it may not be, but in case of doubt you have recourse to two forms of evidence, the other doctor's personal statement that he has given up the case on the one hand, or his receipted account on the other. With either of these before you, your way is clear.

Another common complication which may arise is that a patient under the care of a confrère feels that he is not making the desired progress, and sends for you and says, "I wish you to attend me instead of Dr.————. I have lost confidence in him and want you." What should you do? This is an unpleasant situation and often inevitable, but here your future standing with your confrère may be maintained or destroyed. All of us dislike unpleasant incidents, and the average patient will endeavour to have you pull his chestnuts out of the fire by asking you to visit him without making any arrangement with his previous attendant. But don't you do it. Request him to have his physician ask you to take charge of the case. If he does so and your confrère refuses to communicate with you, and you cannot persuade the patient to allow the other man to continue, then ask him to obtain the other doctor's account and pay it, which procedure automatically terminates the relation of doctor and patient for that occasion. But, if by friendly council you can persuade the patient to continue his relations with your confrère, you will keep both patient and doctor as your friends, and you

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won't wish to turn the first corner the next time you meet your medical colleague.

One of your confrères is out of town or otherwise engaged, and one of his patients has an accident or a medical or obstetrical emergency, and you are called in; you ask, "What shall I do about it?" You act to the best of your ability until the emergency is over, or until your confrère returns, when you hand the case over to him with an account of what you have done. This is his patient, not yours, unless he specifically requests you to carry on.

Let us consider another rather ticklish question. You have been asked by a confrère during his illness or absence to take charge of an individual or a family. You do so and the doctor returns, Enoch Arden like, and some one of this family falls ill and sends for you, "What shall I do about it?" it is an awkward situation, but it should be solved by your declining to attend, referring the patient to his former physician. The patient will counter by saying "You saved my life, etc., etc." As a matter of fact you didn't; he got well in spite of you; but if he persists you can reply that you will only go if the former doctor rings you up and requests you to do so. This will usually end the matter, but if, in the exceptional case, he is as keen for your services as that, you will have kept faith with your predecessor, and, please remember some day you are going to be a predecessor yourself.

When my patient has an ailment of the nature of which I am in doubt, "What shall I do about it?" If the case is not urgent I shall go home and think it over and read anything in my library that bears on it, and go back the next day and forget my opinions of yesterday, and in a good light and with the body exposed examine again every system, not forgetting a rectal examination, or the examination of the blood and urine, and I shall repeat this examination until I know all about the patient that with my faculties and my equipment I can know, and then I shall ask for a consultation.

If a consultant is to be called, it is better that the suggestion should come from his physician, but if you have overpassed the psychological moment and the suggestion comes from the patient or his friends, agree immediately and cheerfully, and if any special name is suggested agree again cheerfully if the man proposed is one of good repute. If you are asked to name a consultant you will be wise to choose one in whom the patient has confidence. The consultant having been decided upon, it is your duty to communicate with him and agree upon a time when you will see the patient together. A man having been called in consultation is in some sense to be regarded and treated as one who has been elected chairman of a meeting. He is no better than he was before, but his new position entitles him to temporary deference, even as the chairman mentioned is entitled to be addressed as "Mr. Chairman."

The attending physician should acquaint the consultant with the history and course of the case and facilitate his examination of the patient, and while this is going on he should refrain from unnecessary comment, but should show an interest in and a respect for the newcomer's methods and procedures. It does not facilitate a consultant's flow of ideas to listen to a monologue of opinions and prophecies from the attending physician, while he is trying to percuss a chest or palpate an abdomen; neither does it increase his *amour propre* to have his colleague leave the room and chat audibly with the patient's friends outside, while he is left unchaperoned to glean what he can from the patient. I recall once being asked by a colleagure to come and examine a child. While I was going over the child's chest, he and the mother engaged in an animated conversation a few feet from the bed. I did not make much headway with the examination and when I asked them—I hope politely—if the noise of the percussion interfered with their conversation, neither seemed to take it in the right spirit, and my first consultation there was my last.

But to return to our story. The consulting physician having completed his examination, you and he should retire and discuss the matter, and if you agree upon an opinion it should be expressed in the presence of the patient or some responsible member of the family. If unfortunately you are unable to agree upon an opinion and different opinions must be given, these also should be expressed in each other's presence and before a member of the family. If you are the consultant, since the confidence of the patient in his physician is his greatest asset as well as his physician's, you should by all means endeavour to strengthen that confidence, and no ungracious or thoughtless remark should be allowed to impair it. For this reason, any changes that are made as a result of the consultation should be brought about through the attending physician's order. Each party to a consultation, like each member of a

government, should make himself responsible for the decisions of that consultation, and later discussions of the details outside should not be entertained.

When you put up your shingle and patients are slow in coming, you may say to yourself—"I have a good training and average ability, but I must make it known or these people will never discover it. Other people advertise;—What shall I do about it? There used to be a saying that a woman's name should only appear twice in a newspaper, and one of these times should be her funeral notice. For a doctor this is an equally good rule. If you want your name in print, let it be in a medical journal where you will be judged by your peers, and, may I say it, an ambition to be well thought of by your medical colleagues is a laudable ambition and one which is not likely to bring you harm. In reference to advertisement among patients, it is said that among some aboriginal peoples news is conveyed with extraordinary rapidity and correctness without the use of any of the resources of civilization. Equally, if a doctor is kind and honest and capable that item need never go into a newspaper, nor need his name ever appear in print, but the whole countryside will know it soon and act accordingly. I have in mind now a man—one of our recent graduates—who went unheralded to a new town, and whose difficulty now is to find time for sleep.

Every doctor will make some friends and have some detractors, and from these he will probably suffer, more from his unwise friends than from his foolish enemies, and people of one or other group will carry tales about you and your mistakes as well as about the wonders you have wrought. These will come to your notice and you ask yourself—What shall I do about it? These things are better left to die a natural death. You did your best and you started no gossip. A motto I once saw on the wall of an office furnishes the answer,—"Don't explain. Your friends don't need it, and your enemies won't believe you." If, however, after a tiring day, when a particularly exasperating person brings some irritating story to your ears and you are tempted to cut loose and verbally set everyone in his right place, that's the time to remember the notice to motorists posted about the city of Washington—"Use your brake more and your horn less." Silence is golden everywhere, but in a doctor it is priceless. Medical etiquette is like K. R. & O. founded on common sense, but with the added flavour of kindness and the working of the Golden Rule. Using these as a working plan, even the most difficult questions become quite simple. One of the most brilliant men whom this medical school has produced was William Morrow, and I well recall his summary of professional etiquette. It was this. "If I feel I could freely call up the other man and tell him just what I have done, I can safely go ahead,"—which is really the Golden Rule in other words.

In addition to your medical brethren, your patients will constantly provide you with the occasion to ask—"What shall I do about it?" There is the problem of the person who misquotes you to other doctors and misquotes other doctors to you. Years ago I was practising in a mining town in the West and was called to attend a woman in an early miscarriage. In enquiring about her history she told me that two years ago Dr. M. had told her she had a "false conception." Realizing that there were many lacunæ in my knowledge I did not wish to expose my ignorance by further questioning, so let the matter drop. Two years later I had a letter from my successor asking me what I meant by a "false conception," as Mrs. R. (my old friend) had had a miscarriage, obviously induced, and had told him that I had attended her for what I told her was a "false conception." This illustrates the fact that *inaccuracy*, to put it mildly, often marks the quotations which patients make of other physician's opinions.

One need not necessarily presume, as a famous surgeon advised, that every patient should be considered a liar till he showed some good reason for telling the truth, but should view with a benevolent scepticism the statements made by patients about the diagnoses made and the treatment prescribed by their previous medical attendants, knowing that his turn will come to be misquoted to someone else. When you cast upon the shifting waters of human memory, the bread of your medical opinions, it may return to you after many days, but you will often find that your cake is dough. Humans are much the same the world over, in college and out of it. There are a few of outstanding intelligence; there are a few hopelessly "dumb"; but the great majority are good ordinary sheep—white and black, but just sheep—and with most of us all that is lacking is the mint sauce. So, when we work hard over some patient and give him our best, and when we find he has not taken either

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our advice or our medicine (the latter may indicate that he belongs to class No. 1), but goes headlong toward physical perdition, or mayhap turns to false gods, like Mrs. Eddy or Dr. Abrams, or chiropractic, or osteopathy, or astrology, or Frank McCoy, shall I excommunicate him or abuse him or lecture him? No, I think not. The better way lies in the words of the Apostle Paul—"Suffer fools gladly."

Some day those of you who take up general practice are going to have people on your list who will be ill for a long time. Long illnesses have their ups and downs, more often downs than ups, and you may look forward with something akin to dismay to frequent visits to a case of hemiplegia, or tuberculosis, or rheumatoid arthritis, or heart disease, where the same old things happen day after day. What are you going to do about it? You are going to mobilize all your resources of mental and physical therapy; you are going there early in the day before you are tired; you are going to extract any crumb of comfort that the occasion will permit and leave it with the patient. You are going to leave all your own troubles outside and bring in any breath of the outside world that will freshen him. You are going to give detailed attention to his discomforts, and explain them if you can't relieve them, and if you have to quarrel with him on arriving, make sure that you depart in a good humour, and be sure you leave something with him each time, a breath of hope, an effort at relief, or even a story. But be sure you make yourself clear.

I went once to see a patient who was much depressed about her state, and on leaving said, quite chipper-like, "Cheer up Mrs. S., you are going to make the grade before very long." I noticed that she did not seem to register enthusiasm, and on my next visit her first words in a reproachful tone were "What did you mean when you said I was going to make the *grave* before very long?"

The time will come when some of your patients are not going to get better, and the patient or his friends are going to ask you what you think. "What shall I do about it?" Ninety per cent of cases of typhoid and seventy per cent of cases of pneumonia will probably get well. Surgical operation cases all get well, except those who die of medical diseases. So, in general, one can offer a large measure of hope in most illnesses, and the patient's attention should certainly be focussed upon hope rather than on despair. But in every instance where the issue is uncertain some responsible person should be made acquainted with the exact state of affairs. Ordinarily, if it is advisable for you to inform the patient that his condition is grave, some member of the family should do it, but the time will come when a man who has a coronary thrombosis, or a spreading peritonitis or a bad pneumonia, will look you in the eye and ask if he is going to get better or not. If you are a real doctor you won't avoid his question, but will tell him the truth that he wants to know. Tell him as kindly as you can, but do not leave him in the dark, as you and I would not want to be left in the dark when our turn comes.

I have kept you over long asking questions and trying to answer them and not succeeding very well. You may well ask—"Is there no such thing as finality in this practice of Medicine?" No, there is not, and that is where the charm lies. You can always be going somewhere, even if you never arrive, but if on the way you can follow the example of Him of Whom it was said "He went about doing good," when someone asks you, after thirty years, if you would change places with the man in any other calling you will answer in the words Kipling puts on the tongue of the Bell Buoy:—

"I dip and I surge and I swing, in the rip of the racing tide,
By the gates of doom I sing, on the horns of death I ride.
A ship length overside between the course and the sand,
Fretted and bound I bide
Peril whereof I cry,
Would I change with my brother a league inland?
Shoal! Ware shoal.—*Not I!*"

PAROXYSMAL SNEEZING AS THE EQUIVALENT OF THE PAROXYSMAL COUGH OF PERTUSSIS.—H. S. Reichle, reports two cases of pertussis in which paroxysmal sneezing had partially or entirely taken the place of the usual spasmodic cough. This symptom is not generally recognized. He asserts that sneezing, if of a paroxysmal nature, may be of great value in diagnosis as an early symptom of pertussis. In young children the sneezing may supplant the cough entirely or partially. The attacks are typically convulsive, cause congestion of the head, cyanosis and exhaustion, and may end in the expulsion of the usual tenacious mucus through the mouth and the nose as in the cough attacks. They may be accompanied by a coryza, an inspiratory crow and vomiting.—*J. Am. M. Ass.* **92:** 443, Feb. 9, 1929.

INDUSTRIAL HEALTH SERVICE*

INDUSTRIAL MEDICINE WITH SPECIAL REFERENCE TO THE MEDICAL AND ALLIED ACTIVITIES OF A LARGE CANADIAN ORGANIZATION

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I AM hoping at the outset to predispose this audience in my favour by saying that in dealing with the subject allotted I will have very little traffic with statistics, and will be content to say that any generalizations I may make are based on reliable and properly recorded studies. Clearly, it seems to me, that the general profession must recognize its parenthood to industrial medicine just as it does in all other special departments, so that I make no apology for bringing such a subject before this society.

It will be realized that in dealing with so large a subject references must necessarily be broad, and very little room will be offered for the detailed discussion of controversial matters, of which many come before men directing medical services in connection with industry. When one speaks of Industrial Medicine the inference should not be that there is implied any special or mysterious system of medicine, that functions only in an industrial environment, but rather that one refers to an organized attempt to confer on industrial groups, both employer and employed, the benefit of the best work and thought of modern medicine in all its departments. It is true that doctors have taken an interest in industrial matters for a much longer time than industrial leaders have concerned themselves in any special way with medical affairs, but the last score of years has witnessed great changes in these matters, so that to-day the case is quite altered, and probably organized business is quite as keen to have skilled engineers supervising its human machinery as it is to have them in any other department.

To those who might find it of interest, I would point out that they may learn of considerable activity along these lines taking place all through the centuries. Monographs and treatises have appeared from time to time, back to the days of Hippocrates and Galen, many of them dealing with occupational diseases and poisonings, but the dawn of the twentieth century may roughly be said to mark the broadening of conception relative to industrial medical problems and the moment when effort was made towards prevention as well as cure.

If it were necessary to impress on such an audience as this the importance of this field of work, and the possibility of satisfying attainment, I could quite conservatively tell you that in the city of Montreal the annual loss, due to sickness and physical inefficiency can be shown to run into eight or nine millions of dollars. In the promotion of industrial hygiene and industrial medicine our American cousins have been very ardent, many of their great universities including in their curricula instruction in these branches. Several of their most prominent hospitals have established industrial clinics. Great interest in these matters has been taken by State Health Boards, Health Agencies and Industrial Medical Association, and the same is true of our own provincial universities.

In actual industrial medical practice, the units will be of great variety, depending on the size of the company to be served and the degree to which its executive are convinced of the advantages of operating a medical service, and will range from one where simple first aid is given by a trained lay person, under the occasional supervision of a medical man, through those units where probably a nurse is in daily attendance in a small dressing station in the plant with perhaps an hour a day from the doctor, to organizations where a well appointed clinic is maintained, often rivalling those of our best hospitals. Some corporations provide hospital accommodation, with a service of the specialties, for their employees. Others, again, go to the extent of providing hospitals not only for employees but also for their families, including maternity and isolation hos-

* Read before the Montreal Medico-Chirurgical Society, January 18, 1929.

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pitals; still others go so far as to press into service modern psychology, both in selecting individuals for positions and in studying them afterwards in the service, attempting so to place them that maximum efficiency will be attained. Thus there is wide variation in the type of activity undertaken, and probably here, as in other fields in the medical domain, the safest, surest, and best course will be found somewhere near the middle of the road.

When a business concern decides to operate a medical service it will naturally take up the question of pre-employment examination. Some make it a part of their plan; others do not. The nature of this pre-employment scrutiny must, to my mind, be governed to some extent by the existence or otherwise of a sickness benefit scheme, either paid for wholly by assessment on the employees, or made up by contributions from both company and employees, or, again, provided entirely by the company itself. Almost universally, nowadays, accident compensation is looked after by some type of compensation board, and there is imposed on the employer the necessity of covering himself by accident insurance, or, in the case of the self-insurer, of providing some guarantee, so that there is never the danger that the workman may not be secured as to his proper indemnity as regards accident disability or death. In the matter of sickness the case is different. There being no legal responsibility borne by the employer to pay for sickness disability, it becomes a question of policy whether provision is to be made or not. Some companies do, and others do not, include sickness disability in their plan.

Viewed from every possible angle, I think it may be said that medicine has justified its inclusion in the program of "Big Business," and, to speak for myself, five years of fairly close contact with this class of work has caused me to hold the view that the potentialities for doing good to workers, employers, and society in general can scarcely be overstated.

As I am linked to this movement principally through my duties in the Bell Telephone Company of Canada, I have thought that I might do worse than give you an outline of the methods employed by this company. I have no authority for the surmise, but I venture a shrewd guess that the Bell Telephone Company did not undertake this fairly important medical work until it felt the need to be a compelling one. A dozen years ago this company inaugurated the system which is now in practice, with minor modifications from time to time. Their aims are:

1. By pre-employment examination to select a suitable personnel.

2. To do all that is reasonably possible to prevent illness and maintain health, and when sickness comes, to make sure that proper treatment is provided, so that restoration may be as early and complete as it should be.

3. To use every means to avoid the occurrence of accidents, and, when these do arise, to see that they are treated skilfully.

4. To make provision for the disabilities of old age, when this has been arrived at through long service, and to do what is possible for the dependents when death comes.

So that you may be able to comprehend the *raison d'etre* of our medical and allied activities it is fitting that I should say something of the character of the organization which these activities are intended to serve.

In the first place we have some three-quarters of a million telephones installed in Quebec and Ontario, and there are about one hundred and forty thousand telephones operated in the same area through connections between the Bell and some nine hundred other telephone companies. Besides, we must stand ready to connect any one of these telephones with any one of some sixteen millions in the United States, and this service must be constantly maintained, night and day, throughout the year, including all holidays and Sundays. Staffs must be always ready at any hour, and in any kind of weather, to carry out emergency maintenance of lines and equipment. There must never arise any labour troubles.

To carry out all these things it is obviously imperative that a very high standard of devotion to duty must be inculcated and fostered, and to this end our company has pressed into service every possible means of creating and perpetuating this spirit, and it has found that the medical department is one important means to these ends. We have upwards of sixteen thousand employees, about ten thousand of them women. Our medical staff consists of a chief medical officer, known as the Medical

Adviser, some one hundred and fifty medical examiners and accident surgeons, as well as consultants in the specialties in the larger cities.

We undertake no medical treatment, if we except the administration of inoculation and vaccination in the presence of epidemics. We treat all our own accidents to a conclusion.

With regard to pre-employment examination, it would be quite possible to devote a whole evening to this matter alone, for it brings up many questions upon which all are not agreed, and to which much study will have to be given before adequate standards are arrived at, as there is involved therein the serious problem of what is to become of the residual group of rejected people who cannot at the present time be safely employed. In my own work I find that it is unusual to reject people absolutely, and it is almost as unusual to accept them without some restriction, such as requiring the correction of errors of refraction, the treatment of nasal conditions, the care of aural defects and diseases, the treatment of diseased tonsils, the proper care of unhealthy teeth, the consideration of skin diseases, of infectious diseases, the cure of hernias, and other bodily deformities, and for many other reasons. All in this group can be employed after being put in a healthy state. I believe that through this phase of the work alone much preventive medicine is carried out and great benefits are conferred on the community. As an example of the kind of thing that happens, I may point out to you that in these pre-employment examinations we not infrequently detect unrecognized syphilis and unsuspected tuberculosis.

Our efforts to prevent disease and maintain health are various and fairly numerous. In the first place, we exercise supervision of our buildings with a view to ensuring hygienic standards. We are constantly bringing health matters before our people through the agency of posters and bulletins, suitably selected and placed, as well as through our magazine, "The Blue Bell." We give annually a series of lectures over a period of eight weeks, known as a "Health Course to Women," and based upon a text-book specially compiled and edited for the Bell System. We encourage recreation in many ways. We make it possible for any employee at the three Divisional Headquarters, *viz.*, London, Toronto, and Montreal, to see the medical department for examination and advice, and we carry out, through trained nurses, supervision of home conditions especially those relating to our female employees.

We have a sickness benefit plan, maintained entirely at the company's expense, through which we provide benefits to those who are ill, under certain conditions. First, they must have been in our employ two years, after which time, depending on their length of service from two to ten years, the periods of benefits that we pay range from four weeks' full-pay and nine weeks' half-pay to thirteen weeks' full-pay and thirty-nine weeks' half-pay. If, perchance, any illness or disability is not cured within this period, and if there are special needs in the case, we often supplement these benefits by further payments from what is known as our "Compassionate Fund." In cases of sickness employees are required to produce certificates from properly qualified medical people, and it is upon these certificates that payments are based. I know that many times busy doctors find it a bit of a nuisance to fill in these certificates, and it is in our mind to make these as infrequent as is consistent with a thorough grasp of the case, but I hope that when it is realized how important to the employee these papers are, and also that it is an important means of preventing our people from coming under the influence of quacks and quackeries, forbearance may be shown.

We carry out a constant campaign with a view to preventing accidents. This includes various cautions and precautions with which you are doubtless familiar, and, furthermore, it includes a minute study of every accident that does occur, for the purpose of assessing blame, or otherwise, and, when fault is uncovered in such an investigation, means are taken to administer appropriate reprimands and to discipline the erring employee.

Throughout the whole system we carry on continuous classes of instruction in first aid under the auspices of the St. John's Ambulance Association, and we have at the present time about three and a half thousand qualified first-aid men, who are supposed to give first-aid in all cases of accident with which they come in contact, whether befalling Bell Telephone employees or the general public, and who are

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always instructed in cases of any doubt, as are all St. John's Ambulance people, to call in the services of a qualified doctor. The interest taken in this activity by the men in our company is quite remarkable, and every effort is made by the company to encourage the attainment of proficiency in their work. A great many valuable awards are given to encourage a high order of work. When accidents requiring the services of a doctor occur, the instructions to our field are to call the regularly appointed surgeons of the company, and when these are not available to get the nearest doctor to administer the necessary first-aid, after which it is our practice in most cases to take charge of the case ourselves.

Our benefit plan contemplates provision for disability and old age. For example, if an employee has been fifteen years in our service, he is eligible for what we call a "disability pension," which may be granted after the full period of sickness benefits has expired, based upon medical examination, which is to be renewed at least annually. A Class "A" pension may be conferred on an employee with twenty years' service, who is sixty years of age; a Class "B" pension upon one who has twenty-five years' service and who is fifty-five years of age; and a Class "C" pension may be granted an employee with thirty years' service without regard to his age. All these pensions are based upon average salaries. When death supervenes we make provision for death benefits.

Arrangements have been made with large Canadian insurance companies to carry for our employees life insurance, the premiums upon which are paid by the company and deducted from the employees' monthly pay. These policies do not require medical examination, and are granted on the record of the employee.

In conducting this medical work, we receive much valuable help and experienced guidance from the American Telephone & Telegraph Company, as is the case in all other departments of the Bell Telephone Company of Canada. At the present moment, for instance, and throughout the year 1929, there is being carried out a study of the situation as it exists in all Bell Companies to-day, with a view to improving our methods for the prevention of illness. This study is being carried out by Dr. Leverett D. Bristol, formerly Health Commissioner of the State of Maine and Professor of Public Health at the University of Minnesota, and, until January 1st, Executive Officer of the Bellevue-Yorkville Health Demonstration in New York City, under the auspices of the Milbank Foundation. Other valuable helps come to us from the American Telephone & Telegraph Company through their statistical studies on the incidence of disease. Through these we learn that climatic conditions exert an influence, and also that there is a constant relation between sickness disability and the activity of local municipal bodies in connection with health matters.

DISCUSSION

Dr. Lewis: It has been a great pleasure to hear Dr. Pennoyer's address and to feel that we have had to-night the opportunity of hearing two addresses on a subject which has to do very considerably with the work of a great many of us. It is especially interesting to hear Dr. Pennoyer's statement about the statistical measures which are being employed regarding the observations on the progress of the health of employees. Hitherto observations have been repeatedly made and lost because of the difficulty of following up cases. But with these measures a vast number of observations will, I hope, become available for special study, which will give the general medical public outside an opportunity of following the progress of certain diseases which are so chronic in their character that it is very difficult to study them from the time of their onset until the time of their final termination.

Dr. Pedley: I wish also to express my thanks to Dr. Pennoyer for the excellent way in which he presented his subject. We are rather accustomed to think of industrial medicine as public health applied to the adult population, but after all the adult population in industrial hygiene is very closely related to public health in infant children. I wonder whether it is generally realized by physicians when we complacently look upon the progress of public health during the past two or three decades, and note how our expectation of life has advanced from, say, 48 years to 57 years, that this increase in expectation of life is almost entirely due, or to a very considerable extent due, to the prevention of disease among children, and also to those institutions which Dr. Pennoyer has so well spoken of. With reference to periodic health examinations in the detection of those diseases which have not shown very much improvement in later years, this is something which the Society should discuss at some later date, as a general measure for all physicians to participate in. My own impression is that if we are going to get anywhere with the prevention of disease we must deal with it before it reaches the stage where prevention and cure are very unlikely. I think we should arrange to have a symposium on periodical examination.

Dr. Pennoyer: I have nothing to add in answer to Dr. Lewis and Dr. Pedley, unless it be to say that I believe that the mass of statistics that we are accumulating will eventually become available. They have not been used for public purposes as yet, and as a matter of fact I am breaking a rule in displaying these charts to-night. They are supposed to be for our own company and employees only. Nevertheless they are being carefully recorded and in such a way that they will be available when the proper time comes, and will be very valuable as facts accumulated over such a long period of years.

A NOTE ON THE BACTERIOLOGICAL DIAGNOSIS OF SPIROCHÆTOSIS OF THE LUNGS*

BY NORMAN BETHUNE, M.B. (TOR.), F.R.C.S. (ED.),

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TWO and a half centuries ago, Leeuwenhoek[1] described spirochætes, fusiform bacilli and vibrios in the secretions of the mouth.

In 1867, Leyden and Jaffe[2] reported spirochætes in the sputum and in sections from the lung in a case of putrid bronchiectasis and pulmonary abscess. Since then, and especially in the past five years, spirochætosis of the lungs and bronchi has been reported from all parts of the world. It is now generally referred to as spirochætosis or fuso-spirochætosis, since these two organisms are constantly associated. This does not imply that they alone are present. It is not an uncommon disease but by no means commonly recognized in this country. In the past certain cases have gone under the names, without etiological specificity, of bronchiectasis, putrid bronchitis, acute or chronic bronchitis, unresolved pneumonia, lung abscess and lung gangrene.

Lung abscess and gangrene, due to anærobic organisms, have been reproduced experimentally by Smith,[3] Kline,[4] Ribierre and Kermorgant,[5] Crowe and Scarff,[6] Allen,[7] Lambert[8] Pilot and Davis.[9]

We have, in the research department of this clinic, produced pneumonia, lung abscess, and empyæma in cats by intratracheal injections of sputum from spirochætal bronchiectasis. We have recovered from the experimental lesions in all cases, spirochætes, fusiforms and vibrios, morphologically similar to those introduced.[10] Pyorrhœal pus will produce, if introduced in this way, a similar pulmonary lesion.

The stumbling-block to the general acceptance of the disease as a disease, *sui generis*, is the nonfulfilment of Koch's four postulates. The technical difficulties involved in obtaining pure cultures of the five to eight bacterial members of the symbiosis have held this up. However, progress is being made. Smith, of Raybrook, N.Y., has been at work for two years on this problem. The results up to the present are very encouraging and would seem to indicate that in addition to the fixed types there are many strains of each. The number of possible combinations of the organism just obtained is very large. We suggest that a possible explanation of the various forms of the disease, ranging from a chronic bronchiectasis of twenty years' duration to an acute pulmonary gangrene (Vincent's of the lung), may be found to depend on the factors of the predominance of a certain type or strain of organisms, distinguished by a particular virulence, the result of variations, perhaps daily, and certainly seasonal, in their environment as represented by the body of the host.

These anærobic organisms frequently found in the sputum of bronchiectasis and pulmonary suppurations are indistinguishable in appearance and behaviour from those found in the so-called "normal" mouth and in large numbers in pyorrhœa. Along the gum margin, on the teeth, and in the crypts of the tonsil, is found a peculiar association of organisms—a symbiosis of anærobic and ærobic bacteria—spirochætes, fusiform bacilli, vibrios, bacilli and cocci. They are usually present in health, in the so-called "normal" mouth, and are constantly present in such oral diseases as gingivitis, pyorrhœa, "trench-mouth," Vincent's angina, etc.

The classification of mouth organisms is by no means finally determined. Noguchi[11] states that there are eight anærobic spirochætes—two large types: *treponema vincenti* and *treponema buccale;* one intermediate, *treponema macrodentium;* and at least four smaller types, *treponema microdentium, treponema mucosum, treponema orthodontum* and *treponema skoliodontum* of Hoffman; and in addition the mouth may contain a leptospira and entamœba as normal inhabitants. There are also present two types of fusiform bacilli; a large and a small one. The vibrios present may be of one or more types; at least six have been described at various times. One, if not more, is constantly present and

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easily recognized. Leptothrix (a general term to include mycelial threads) is found in the crypts of the tonsil, forming a cluster of filaments on which spirochætes and fusiforms are grouped. The *entamœba buccalis* and *trichomonas* may be present also. The streptococci of the tonsillar crypts are predominatingly of the hæmolytic and non-hæmolytic type; the former an ærobe, and the latter an anærobe (at least when first cultivated). The streptococci of the tonsillar surface are predominatingly of the viridans type, according to Davis.[12] In addition there are found a large number of Gram-positive and Gram-negative organisms, diphtheroids, cocci and bacilli (*e.g.*, the influenza bacillus).

Just as the streptococci of the tonsil have not been differentiated from strains of streptococci causing serious infections,[13] so the spirochætes, fusiform bacilli and vibrios of the mouth have not been differentiated from those causing bronchial or lung suppuration. They must, therefore, be regarded as potential etiological agents of lower respiratory infections. They are opportunists. They exist in their local and normal buccal environment as saphrophytes, but are able, under certain conditions, and in a new, strange, or altered environment, to become pathogenic. These conditions include aspiration under an anæsthetic, avitaminosis, during concurrent infections, following wounds, tumours—in short any alteration of the soil. They then take upon themselves a new virulence, and initiate by their presence a severe, acute or chronic disease, such as gingivitis, pyorrhœa, "trench-mouth," noma, Vincent's angina, ulcerative bronchitis, bronchiectasis, lung abscess, lung gangrene and empyæma. Since these so-called saprophytic and pathogenic types are indistinguishable morphologically, the greatest care must be exercised that, in the examination of the sputum, the mouth organisms are not confused with those from the lower respiratory tract.

The two common ulcerative pulmonary lesions are tuberculosis and spirochætosis. Neglecting for the moment the difference in roentgenographic appearance, both may present the similar clinical picture of cough, expectoration, night sweats, hæmoptysis, etc. It is first necessary to rule out the former disease as being the commoner one. If the sputum is repeatedly negative for tubercle bacilli, by direct smear, concentration and guinea pig inoculation, and if elastic tissue—the sign of ulceration—is present, one must suspect non-tuberculous ulcerative disease, such as spirochætosis (bronchiectasis, abscess or gangrene), or tumour, or one of the pneumonomycoses. Low power and dark field examination, staining and culture methods, will differentiate. Although the fusiform bacilli and spirochætes stain fairly well (the fusiform very well indeed) with ordinary dyes, the best stain is the Fontana. Nigrosin is very good also.

The dark field is indispensable for examination. The organisms are alive, motile and quickly identifiable. If spirochætes and fusiforms are not present, one should look for fungi under the low power. They may be looked for at the same time as the elastic tissue. If fungi are suspected, incubate on Sabouraud's medium, thickly streaked, for one week. If spirochætes and fusiforms are present, one should suspect mouth contamination, and only when this is ruled out, permit oneself to be persuaded that these organisms come from the lung. Remember the association of cancer of the lung, and occasionally tuberculosis, with spirochætosis. Here the spirochætes are probably secondary invaders. It is difficult to evaluate their respective effects. If, as some assert, they are always secondary invaders, one may ask why they are not constantly present in tuberculosis with cavity formation. On the contrary, it is rare to find them associated with this disease.

PRACTICAL POINTS IN THE SPUTUM EXAMINATION

Pick a piece of the whitish exudate from the margin of the gum in a case of pyorrhœa. Examine with dark-field illumination. This will represent the maximum and exaggerated picture we must look for in spirochætosis. Routine examination of hundreds of specimens of sputum, casually collected and unwashed, from cases of proved and suspected tuberculosis, silicosis, bronchiectasis, chronic bronchitis, etc., leads to the definite conclusion that the mere presence of a few scattered spirochætes and fusiform bacilli is of no particular significance. They are contaminants, picked up by the true bronchial secretions in passing over the tonsils, tongue, and teeth. There may be

none in any given specimen, or there may be dozens. The number depends on the state of health of the mouth and the care given to mouth hygiene. Take such a sputum which contains a few on first examination. Wash it through three or four changes of saline. Examine the first saline washings. They will frequently be found to contain a certain number of spirochætes. After the third or fourth change, pick up a piece of the mucous mass, put it on a slide, add a drop of normal saline and examine. If the spirochætes, fusiforms and vibrios are present in large numbers (from one to 10 or more in a field), and very active, it is presumptive evidence that their origin is from the lower respiratory tract. However, a possible error may exist. It is possible that a tonsillar crypt excretion, or a small piece of pus from a carious tooth, or the whitish exudate lying in the gum-tooth junction, may have become entangled in the mucous mass. So, still another precaution is necessary. As thorough a cleaning of the mouth as possible, before collection, should be done. Proceed as follows. Carefully examine the mouth. Note gingivitis (from mild reaction to pyorrhœa), carious teeth, and white "spots" on the tonsil. If pyorrhœa is advanced, or many carious teeth are present, and if the crypt contents of the tonsil are easily dislodged, then the positive findings in the sputum must be discounted. With the handle of a clean new tooth-brush squeeze both tonsils and attempt to express the contents of the crypts. Then instruct the patient (and not one patient in a hundred knows how to brush the teeth properly) how to use a tooth-brush. Use a pint of warm saline as a dentifrice, to rinse the mouth, and as a gargle afterwards. Now the patient is ready for the collection of sputum. If there is a large quantity (more than 1 oz.) posturing is desirable. Collect the sputum in two clean Petri dishes. The last half coughed up is the most important; presumably it comes from lower down the bronchial tree. Proceed to examine while still warm. Wash each sample in three changes of saline. Flame the loop between each transfer. After the last washing, carefully examine the mucous masses in a black-bottomed dish and pick out any small particles of a whitish or greyish-white colour. Transfer to a slide, add a drop of normal saline (the thinner the preparation the better), and cover with a slip. Examine with the dark field. If spirochætes, fusiforms and vibrios are present, their origin is probably from the bronchi or lung. No more definite opinion can be given. A judicious scepticism is the best attitude.

All glass must be immaculately clean. Use only new slides. Don't be misled by minute scratches, or the curved edge of leucocytes and red blood cells, chains of cocci, or mycelial threads. Work through the preparation systematically with the moveable stage. Alteration of the focus will often show a spirochæte or fusiform bacillus which is lying obliquely and so not completely seen with a fixed focus. Make four to six preparations from different parts of the sputum before reporting "not present."

The same careful mouth hygiene should precede bronchoscopic examination. Swabs then taken of bronchial secretions should show true residents of the lower respiratory tract, if done by the method of Bucher.[14] Chevalier Jackson has recovered from bronchial ulcerations fuso-spirochætal organisms.[15] This method and the undisputable evidence from pus obtained at open operation afford the only two absolutely conclusive proofs. Such evidence was obtained recently in a case under the care of Dr. Archibald.

CASE 1

A child of ten years of age was admitted to the Royal Victoria Hospital with a lung abscess following tonsillectomy. Two examinations of the sputum were negative for spirochætes and fusiforms. The third showed an occasional one, and the fourth rather more. Physical examination gave signs of cavity. Lipiodol injections by the cricothyroid route showed complete obstruction of the left lower bronchus. The abscess cavity was not filled. This explained the inconclusive bacteriological results with the sputum. At operation (incision and drainage) the foul pus of the abscess contained a dozen or more shaggy necrotic masses, evidently from the abscess wall. They consisted literally of thousands of spirochætes and fusiforms to a field in a state of furious activity. The general mass of the pus contained 10 to 20 spirochætes and fusiforms in each dark field.

CASE 2

Another case of pulmonary abscess (post-tonsillectomy) would expectorate one ounce daily. A few spirochætes, fusiforms, vibrios, and streptococci were found in the carefully collected and washed sputum. Following a diminution of the amount of sputum for several days, the patient suddenly coughed up six ounces. This evacuated material was swarming with these anærobic organisms. Following the evacuation, the cavity (an upper lobe one) was easily filled with lipiodol by the simple transglottal drop method.

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CASE 3

A case of bronchiectasis of ten years' duration showed no spirochætes and only a few fusiform bacilli, vibrios, and cocci. 1 c.c. of carefully collected and washed sputum (although the mouth and teeth were not obviously diseased) was injected subcutaneously into the groin of a guinea pig. Two weeks later the resultant large abscess burst and the pus contained millions of spirochætes, fusiforms, vibrios, and cocci.

Do this subcutaneous injection in suspicious cases and leave for ten days or so, then examine the abscess pus under the dark field.

The presence of fusiform bacilli alone is always suspicious of spirochætosis. Such sputum should be injected into a guinea pig. The presence of fusiforms alone is occasionally seen after treatment with arsenic. In one of our cases they were the first to reappear after the cessation of the arsenical course. Three days later spirochætes reappeared also.

To culture these anærobic organisms inject 1 c.c. of the carefully collected and washed sputum into the groin of the guinea pig. Leave for ten days. Use the pus of this abscess to make cultures. The passage through the guinea-pig eliminates gas-formers which otherwise would split the media. Noguchi's solid medium[11] of meat infusion agar, pleural or ascitic fluid, kidney, with a mineral oil seal, will grow the spirochætes. The fusiforms and vibrios can be cultured on meat-infusion-agar mixed with horse-serum laked blood. They also are strict anærobes. Use inverted, vaseline-sealed, Petri dishes (Smith's method).

By the use of these three methods— the dark field examination, stained smears, and cultures —a diagnosis of spirochætosis can be arrived at or excluded.

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PITUITARY EXTRACT IN DIABETES INSIPIDUS.—To avoid the necessity for repeated hypodermic injections of extract of the pituitary posterior lobe in cases of diabetes insipidus other less painful and more convenient methods have been devised, and J. R. Campbell, Jr., and H. L. Blumgart, have demonstrated that intranasal applications are as effective as injections. Eight cases of different etiology are reported in which the polyuria and polydipsia were effectively checked by this measure. Two intranasal methods are mentioned as practicable. In one, from 0.5 to 1 c.cm. of obstetrical pituitrin, which is half the strength of surgical pituitrin, is sprayed at three-, four-, or six-hour intervals into the nose so as to be deposited mostly on the roof of the nasopharynx. The second method, which is adopted by the authors, is application by means of a cotton swab. A pledget of absorbent cotton is soaked in 0.5 to 1 c.cm. of the extract, and is passed up one nostril towards the eyebrow. This is left in place till the next application, when it can be easily removed by blowing the nose. As a rule alternate nostrils are used. Emphasis is laid on the importance of inserting the pledget high in the nasopharynx. Occasionally a burning sensation is produced by the drug, but this usually passes off in a few days. In one case treatment had to be discontinued owing to intense nasopharyngeal irritation. This treatment can be as effectively applied by the patients themselves. The authors believe that the efficacy of the applications must be due to the continuous intranasal absorption of the drug over a long period of time, and that the absorption takes place through the lymphatics and not through the vascular routes.—Abs., *Brit. M. J.*

KIPLING ON THE MEDICAL PROFESSION.—Kipling, in his praise of the medical profession, has a passage which every doctor should know; he uses the same ideas in "The Spies March." "May I remind you of some of your privileges? You and Kings are the only people whose explanation the police will accept, if you exceed the legal limit in your car. On presentation of your visiting-card you can pass through the most turbulent crowd unmolested and even with applause. If you fly a yellow flag over a centre of population you can turn it into a desert. If you choose to fly a Red Cross flag over a desert, you can turn it into a centre of population towards which, as I have seen, men will crawl on hands and knees. You can forbid any ship to enter any port in the world. If you think it necessary to the success of any operation in which you are interested, you can stop a 20,000-ton liner with mails in mid-ocean till the operation is concluded. You can tie up the traffic of a port without notice given. You can order whole quarters of a city to be pulled down or burnt up; and you can trust to the armed co-operation of the nearest troops to see that your prescriptions are properly carried out."

RESUME OF THE RESULTS OF THERAPY WITH CONVALESCENT SERUM IN POLIOMYELITIS*

By J. M. McEachern, M.B., Bruce Chown, M.D., Lennox G. Bell, M.D., Mary McKenzie, M.D., (Gordon Bell Fellow),

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CONVALESCENT serum was used extensively during the Manitoba epidemic of poliomyelitis in 1928. The serum used was the pooled, sterile, Wassermann-negative blood serum of from six to eight donors. These donors had had the disease from a few months to thirty-three years previously, each donor's case having previously been confirmed from original sources and by examination.

The intra-muscular method of administration was used almost exclusively. Standard doses of 25 c.c. of serum were employed in the early stages of the disease. Over 8,000 c.c. of serum, prepared under the direction of Dr. F. T. Cadham, was administered during the course of the epidemic. No unfavourable reaction followed its administration.

Notable papers on convalescent serum therapy are those of Shaw and Thelander,[1] Romer and Joseph,[2] Amoss,[3, 6] Netter,[4] Peabody,[5] Aycock and Luther.[7]

Of the 161 cases here reported, 74 received serum in the pre-paralytic stage of the disease; 54 received no serum; and 33 cases received serum too late to be of much value, that is, after the onset of paralysis.

In the following analyses, by early paresis or paralysis is meant the occurrence of such a catastrophe in the early stage of the disease, usually between the third and tenth day. If paralysis or paresis was definitely found between the third and fourth week of the disease it was termed "residual" paralysis or paresis. (These end results it is hoped will be further checked after five or six months.) Since all the cases were checked at approximately the same stage the results are comparable.

The series has been divided into four groups.

Group I consists of 57 cases which received an average of 25 c.c. of serum intramuscularly in the pre-paralytic stage of the disease. Of this group 93 per cent made a complete recovery. There were no deaths.

Comparison of these results with those in Group IV who received no serum at all is interesting. Of the 54 cases in Group IV only 26 per cent made a complete recovery; 11 per cent died; and the remainder were paralyzed.

Group III consists of those cases which received serum after the onset of paralysis. Of these 57 per cent became paralyzed before the fourth day. (Only 41 per cent of the cases which received no serum were paralyzed by the fourth day.) Group III numbered 33 cases: of these only 22 per cent made a complete recovery; 33 per cent died; and 45 per cent became paralyzed. General observations upon these figures would seem to indicate, firstly, that the earlier the onset of paralysis the worse is the prognosis, and, secondly, that serum is of little value once paralysis has ensued. The fact that the cases in this group became paralyzed at an earlier date may explain why serum was not administered in the pre-paralytic stage.

Group II consists of 17 cases which received one or more doses of serum by various routes, or which received more than one dose of intramuscular serum. The results are approximately the same as those of Group I.

These findings are summarized in Tables I and II.

Table I

Total number of cases	161
Total number of deaths	17—11 per cent
Total residually paralyzed	54—33 per cent
Total completely recovered	90—56 per cent

Granted that the virus becomes attenuated in the later stages of an epidemic, in order to prove our contention that serum is effective it becomes necessary to compare the figures during one given month of the epidemic. That there is such a lessening severity is shown in Table III.

If, however, we compare the results of our

* A complete report of the Manitoba epidemic has been published by the Department of Health and Public Welfare, Manitoba.

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TABLE II

Group	No. of Cases	No. Completely Recovered	Percentage Completely Recovered	No. Showing Residual Paralysis	Percentage Residual Paralysis	Deaths No.	Deaths Percentage
I	57	53	93	4	7	0	0
II	17	16	94	1	6	0	0
III	33	7	22	15	45	11	33
IV	54	14	26	34	63	6	11

Group I: 1 dose intramuscularly of serum in the pre-paralytic stage.
Group II: 2 or more doses of serum given by various routes (pre-paralytic stage).
Group III: serum given after the onset of paralysis.
Group IV: no serum given.

TABLE III

	No. of Cases	Early Paralysis Percentage	Residual Paralysis Percentage	Deaths Percentage	Complete Recovery Percentage
August Cases without serum treatment	28	96	68	18	14
September Cases without serum treatment	22	82	59	5	36

serum treatment with the controls, for the month of September, we find that the decrease in virulence indicated in Table III is much less evident than the great improvement of the figures for treated cases shown in Table IV. For example, of the 22 cases in September who received no treatment 36 per cent made a complete recovery, while of 50 cases in the same month who received serum in the pre-paralytic stage 94 per cent made a complete recovery.

It is well known that the effect of the virus is greater in the country than in the city—that cases are more severe in the rural districts. If the control cases were entirely from the country and the treated cases from the city the results would be open to criticism. In Table V the September cases are further divided into those from the city and those from the country.

From these results it will be seen that fallacies based upon incorrect use of city and country cases have been disposed of.

A final objection may be raised: Are not the

TABLE IV

	No. of Cases	Early Paralysis Percentage	Residual Paralysis Percentage	Deaths Percentage	Complete Recovery Percentage
September No serum	22	82	59	5	36
September Serum in pre-paralytic stage	50	10	6	0	94

TABLE V

City Cases in September

	No. of Cases	Early Paralysis Percentage	Residual Paralysis Percentage	Deaths Percentage	Complete Recovery Percentage
No serum	14	86	50	7	43
Serum in pre-paralytic stage	43	7	5	0	95

Country Cases in September

	No. of Cases	Early Paralysis Percentage	Residual Paralysis Percentage	Deaths Percentage	Complete Recovery Percentage
No serum	8	75	75	0	25
Serum in pre-paralytic stage	7	29	14	0	86

beneficial results observed in the serum-treated cases due to the fact that they are milder cases, that the controls for the most part are those seen after paralysis had occurred? This criticism is not so easily disposed of, but we may answer it from several different angles.

Firstly, the marked actual difference in percentage of complete recovery between the treated cases and the controls in September should in itself be sufficient to dispose of this criticism. Secondly, during that month nearly every case occurring in the city was seen by the Committee, and there is no reason to suppose that the severe cases were almost entirely absent from the treated group of nearly sixty cases.

Thirdly, if we assume that serum has no therapeutic value whatever, an accurate analysis according to the statistical method by a qualified statistician has shown that the results shown in Table V, could only occur once in five hundred times. The arbitrary level of significance is taken to be one in thirty.

Fourthly, assuming that a cell count of over 100 indicates a serious type of disease as shown by Draper,[8] a comparison of the cell counts in treated cases and controls in Table VI shows no appreciable difference in numerical incidence of the counts. Ninety-two per cent of these counts in the treated cases were made by the fifth day of the disease; 82 per cent were made by the fifth day in the controls. The difference of 10 per cent is not felt to be significant, as there is no marked change in the cell counts during the first week of the disease. (Peabody[5]). Using the cell count as an indicator, the control cases were not more seriously infected than the treated cases.

Table VI

Incidence of Cell Counts in Treated and Control Cases

Cell Counts	Treated Cases	Control Cases
10–99	36	23
100–199	12	10
200–299	6	4
300–399	0	0
400–499	2	1
500–1000	2	2
1000–2000	2	0
Total	60	40

Finally, it is felt that a comparison of the results in cases which had early paresis or paralysis with the end results will give us the true index of recovery in treated and untreated cases. It has been shown that the initial paralysis is the ultimate reaction to the virus. For example, no case with paresis early in the disease has later developed paralysis. The results of the comparison are seen in Table VII and VIII.

Table VII

End Results in Cases Which Had Early Paresis or Paralysis

	No. of Cases	Per cent Recovered	Per cent Residual Paralysis or Death
Treated Groups I & II	13	62	38
Control Groups III & IV	82	20	80

Table VIII

Results in Cases Which had Early Paresis Alone

	No. of Cases	Per cent Recovered	Per cent Residual Paralysis
Treated Groups I & II	12	67	33
Control Groups III & IV	30	40	60

In Table VIII are seen the results in a group of paretic cases of about the same degree of severity in which the results seem to justify the use of serum in the preparalytic stage.

General observations on the *immediate* therapeutic value of the serum in this epidemic indicate that the usual result was an immediate drop in temperature and complete recovery from most of the symptoms complained of. The signs for the most part persisted.

Conclusions

1. Convalescent serum is of value when administered in the pre-paralytic stage of the disease.

2. The intramuscular route of administration is simple, safe, and sufficiently efficacious to justify its use during an epidemic.

We wish to thank Professor A. T. Cameron for invaluable assistance in the preparation of this paper.

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METALLIC COMPOUNDS IN THE TREATMENT OF LUPUS

REPORT OF A CASE OF LUPUS ERYTHEMATOSUS SUCCESSFULLY TREATED WITH GOLD AND SODIUM THIOSULPHATE

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DURING the hectic days of '49 the hardy Nordic pioneers blazed the westward trail over the desert sands to take part in the greatest gold rush of history. In like manner the dermatologists of to-day have eagerly embraced the pioneer discovery of Schamberg that some of the salts of gold are almost specific for lupus erythematosus. Any agent which alleviates physical suffering or adds to the sum of human happiness should have a place in our armamentarium, especially in our fight against lupus erythematosus, a disease which has hitherto been the despair of dermatologists.

The salt of gold now most commonly employed in lupus, *viz.*, gold and sodium thiosulphate, was first isolated by Fordos and Gelis[1] in 1845, but it was not until 1890 that the brilliant mind of Robert Koch[2] discovered that salts of gold inhibit the growth of tubercle bacilli *in vitro* in a dilution as low as 1:1,000,000. Many years later Bruck and Gluck[3] noted improvement in lupus vulgaris treated by intravenous injections of potassium gold cyanide. In their opinion, the favourable effects were enhanced when the drug was used in combination with tuberculin injections. Between 1913 and 1917 several European investigators, using various compounds of gold, corroborated the work of Bruck and Gluck. In 1917, Feldt[4] introduced a new gold compound, krysolgan. Since then, this compound has been used extensively on the continent by many observers and the reports on its use in tuberculous dermatoses have been in the main favourable. This is especially true of lupus erythematosus. Semon[5] has recently reported a series of cases of lupus erythematosus treated by krysolgan with results as follows: 22 per cent cured, 66 per cent improved, and 11 per cent uninfluenced.

Until 1924 the salts of gold with the exception of gold and sodium thiosulphate had proved rather too toxic for human use, and the latter drug, so far as the writer can find, had not been employed in either systemic or cutaneous tuberculosis up to that date. Mollgard[6] in 1924 published his well-known work on "The Chemotherapy of Tuberculosis," and in it he described how he had perfected a method for the manufacture of gold and sodium thiosulphate by which the yields of gold were much higher than in the original method of Fordos and Gelis. This product he named "sanocrysin." Mollgard's researches were at first highly acclaimed by internists and specialists on tuberculosis throughout the world. Sanocrysin was given a thorough trial in numerous cases of pulmonary and bone tuberculosis. Many striking results were obtained, but it was found that in the dosage recommended by Mollgard, reactions were many and serious. Until the time of the publication of Mollgard's work and for two years thereafter, no English-speaking observer had tried out sanocrysin in cutaneous tuberculosis.

In January, 1926, Schamberg, Harkins and Brown[7] published their brilliant paper on the results of treatment by gold compounds in experimental tuberculosis of the skin in animals, in which they concluded that gold compounds have a demonstrably favourable effect on cutaneous tuberculous lesions, and also prolong the life of experimental animals infected with generalized tuberculosis.

In November, 1927, Kropatsch[8] reported his experiences with "aurophos," a new gold compound, in lupus erythematosus and lupus vulgaris. This author treated 23 cases; 8 were entirely cured; 8 showed extensive improvement even after radium and krysolgan had failed; 4 showed slight but undoubted improvement; and 3 were intensified by treatment, but later with smaller dosage also improved. This

observer also treated 10 cases of lupus vulgaris, but with much less satisfactory results. Kropatsch holds that aurophos has a stronger effect than krysolgan and is much less toxic. Judging from his paper, however, fairly severe reactions are common after the intravenous use of the drug.

In February, 1927, Schamberg and Wright[9] reported their results in 25 cases of lupus erythematosus treated with various gold compounds given intravenously. They found gold and sodium thiosulphate to be the most satisfactory and least dangerous of all the salts of gold. They were greatly impressed with the favourable results which they have obtained. Nearly 50 per cent of their cases were virtually cured and the great majority of the remainder were definitely improved. Quite recently Whitehouse and Bechet,[10] following the lead of Schamberg, and with his co-operation and advice, have treated a fairly large series of cases which included lupus erythematosus, lupus vulgaris, tuberculides and tuberculosis of the skin. They report very satisfactory results. They look upon sanocrysin as an efficacious and reasonably safe remedy, especially in erythematous lupus.

My attention was first attracted to this subject by Drs. F. X. Wilhelm and George F. Koetter,[11] of Los Angeles, during a discussion on the treatment of lupus erythematosus at the White Memorial Hospital Outpatient Department.

CASE REPORT

A married woman, Mrs. F. T. P., aged 44, white, came to my office September 16, 1927. At this time she had a typical lupus erythematosus rash which involved the nose, both cheeks, the forehead, the upper lip and the chin. The disease had been present for approximately ten years.

Family History.—Father alive and well; aged 71. Her mother died of bone tuberculosis at 51 years of age. Three brothers alive and well. No sisters.

Personal History.—Married in 1919. Has one child, a girl three years of age, who is perfectly healthy. One miscarriage at two months following the first and only child and said to be due to injury. She has had the usual children's diseases; had an appendectomy in 1911. tonsillectomy in 1917, smallpox (severe) in 1920 and influenza and pneumonia in 1924. Apart from these she has had a very healthy life.

Present Illness.—Patient was visiting in California in spring of 1917 and had been out in the sun and wind and also on the beach a good deal. In May, 1917, she returned to South Dakota when she first noticed a small pimple on the right cheek. This pimple enlarged slowly. A local physician diagnosed it as ringworm but it did not respond to ringworm treatment. In August, 1917, she consulted a dermatologist in Minneapolis. At this time the lesion on the right cheek was about the size of a dime, was quite red and scaly and the skin was thickened and heaped up at the edges. Water-cooled quartz lamp treatments were tried with no result. For a year and a half she made numerous trips to Minneapolis and all this time the disease kept spreading. She had some stomach tests made, and was treated for constipation. Her teeth were x-rayed and found to be in good condition. She feels quite sure that the water-cooled quartz lamp aggravated the condition every time it was applied. In May, 1918, she had carbon dioxide snow applied which gave a big reaction but poor results. In the summer of 1918 two patches of alopecia appeared in the occipital region and two new patches of lupus appeared on the forehead and one on the nose. From 1918 until 1923 no particular treatment was taken except soothing salves. The disease progressed steadily during this time covering the bridge of the nose and both cheeks and also the forehead in typical butterfly fashion. She took a number of x-ray treatments between 1922 and 1926 but these were applied only to the right side of the face. Each treatment made the disease worse. The disease was rather quiescent so far as discomfort was concerned between 1919 and 1923. She was pregnant during part of 1923 and 1924 and during this period the disease got much worse and a large patch appeared on the chin. In 1924 she took a number of air-cooled quartz lamp treatments and each time had a big reaction. There was some improvement however, because the patch on the chin disappeared temporarily. No particular change took place in the disease from 1924 to 1926. In the fall of 1926 she returned to California and the disease again became much worse, extension

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taking place on the left cheek, the lips, the chin, eyebrows and forehead. The subjective sensations of burning, itching and stiffness became much worse especially after a day at the beach or if she took an automobile ride. She has noticed that a number of things make the rash worse. Among these are exposure to sunshine and wind, cooking over a hot stove, any exertion which causes her to perspire, the ingestion of a large hot meal and any condition which puts her under mental strain.

Physical Examination.—She is a well developed, well nourished woman of middle age and healthy appearance. Weight 152 lbs. The tongue is clean and moist. She has a number of decayed teeth and some evidence of pyorrhœa. The general examination otherwise presented nothing abnormal, except the condition on the face, on which is seen the typical butterfly efflorescence of lupus erythematosus involving both cheeks, the bridge of the nose, the forehead and the upper lip. There are two fair-sized patches on the chin. There are no patches below or behind the ears. She has two patches of alopecia, each about the diameter of a fifty-cent piece, located in the occipital area on both sides. The right side of the face where she has had the most treatment is much worse than the left side and the forehead. On the right side the margin shows much heaping up and hyperkeratosis. The right cheek shows a good deal of scarring and is very scaly. It has a purplish hue. The bridge of the nose is very rough and shows much hyperkeratosis. The patches on the forehead, left cheek, chin and lips are rather superficial but quite scaly. Many small nodules are present over the face where the ducts of the sebaceous glands have been blocked.

The Wassermann test was negative; the urine was normal, and a careful and complete examination of the blood showed nothing unusual.

Fluoroscopic examination of the chest showed a few enlarged bronchial glands around the hilus of each lung, also slight peribronchial infiltration rather widely scattered throughout both lungs.

On September 16, 1927, she was given her first dose of gold and sodium thiosulphate (sanocrysin) consisting of 50 mgm. given intravenously. There was no immediate reaction. A week later there was a slight improvement in the rash; it was not quite so red. The patient stated she had had complete comfort in her face for the first time in years. Fifty mgm. of gold and sodium thiosulphate were given intravenously. September 30th, considerable improvement in the rash was noted. She had had complete comfort in the face, and no immediate nor delayed reactions had followed the previous injections. Fifty mgm. of gold and sodium thiosulphate were again given intravenously, and repeated one week later.

October 14th, patient again reported steady improvement. Since the last dose she has had a papular eruption between and on the pads of the fingers. This eruption resembled pompholyx or vesicular eczema. It was very itchy and extremely tender to touch. The patient menstruated during the past week (she had not menstruated for three months prior to this). In addition to the eruption on the fingers she had had a condition for the previous week which resembled influenza; there was some rhinitis and considerable pain in the joints. As for the eruption on the face, all itching and burning had completely gone, the rash now never became fiery red, and the elevated margins were flattened out in a remarkable manner; the edges had receded and the general hyperkeratosis had improved at least 50 per cent. She was again given 50 mgm. of sanocrysin intravenously.

October 20th. Rash much improved. Hyperkeratosis on the nose much less marked. The lupus has almost disappeared from the forehead, chin and left cheek. The patient is very enthusiastic over the treatment. The sixth dose of sanocrysin was given (50 mgm.). Patient had slight syncope after injection.

October 22nd. The patient was much improved. She could now wrinkle the forehead and the skin on the nose which was impossible before starting treatment. No reaction occurred after the last dose of sanocrysin. She received her seventh dose of 50 mgm., given again intravenously.

November 19th. Improvement in the last three weeks. The last four doses of 50 mgm. were each given at four-day intervals.

December 1st. Steady improvement. The rash had almost entirely cleared up except for a resistant area on the right side of the face. 100 mgm. of sanocrysin given for the first time. The

patient had had 14 doses each of 50 mgm. up to date).

December 5th. No reaction from previous 100 mgm. Steady improvement. Another 100 mgm. of sanocrysin given intravenously.

December 27th. Patient steadily improving. No reaction from previous treatments. Patient had indulged in two Christmas dinners, also had been out in the motor car in the sun and wind with no ill effect. Another 100 mgm. of sanocrysin given intravenously. She was advised to use salicylic acid and collodion mixture on the nose twice a week.

January 25, 1928. Eruption had almost entirely disappeared. She still had some hyperkeratosis on the nose and an atrophic patch on the right cheek. 100 mgm. of sanocrysin given intravenously.

February 1, 1928. Eruption had completely disappeared from the forehead, left cheek, lips and chin. The nose was now practically well. The right cheek showed a small patch of atrophic scarring which I believed to be due to former x-ray treatment. Normal sensation had returned over the whole area previously involved. Patient had now taken eighteen 50 mgm. doses and ten 100 mgm. doses of gold and sodium thiosulphate. She had had no general reaction since the fourth dose and at no time had she had an immediate severe reaction from the treatment. Her general condition had been excellent throughout the course of the treatment. She even believed that the gold had had a tonic effect upon her and said that she felt better now than she had felt for years.

COMMENT

Ehrlich's discovery of salvarsan was apparently the starting point in modern medicine for intensive research into the chemotherapeutic effects of the salts of the heavy metals. However, it is only fair to say that the Chinese knew, about 4000 B.C., that mercury exerted a favourable effect on a disease which we now know to have been syphilis.

The first founder of chemotherapy as a science was no doubt Paracelsus, as pointed out by Whitehouse and Bechet. Paracelsus employed gold in the treatment of many disorders. He also used silver, tin, lead, copper and mercury. Modern interest in gold compounds dates from Robert Koch's announcement in 1890 that gold compounds in high dilution exert an inhibiting effect on the growth of tubercle bacilli. The use of gold compounds in the treatment of lupus however, is comparatively recent.

Other metals have been used in the treatment of lupus erythematosus. Ravaut and Bocage[12] for instance, treated 23 cases with neoarsphenamine. Of this group, 6 could not tolerate the treatment; of the remaining 17, 7 were cured, 4 almost so, 4 were greatly improved and in 2, the therapy failed. In some cases their results were improved by the addition of glucose and sodium thiosulphate. Recently Sezary and Benoist[13] have reported two cases of lupus erythematosus successfully treated by using the salts of bismuth. They prefer bismuth to arsenic.

During the past twenty-five years the science of chemotherapy has made giant strides. The work of such men as Ehrlich, Mollgard, Schamberg, and others, is constantly opening up new vistas of scientific knowledge and new avenues for research. As time goes on and as knowledge advances, it seems not too much to expect that we will find new uses for the salts of the heavy metals and especially in the treatment of the various forms of lupus and other tubercular dermatoses.

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AFFECTIONS OF THE ŒSOPHAGUS*

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THE œsophagus in the adult is about 9 inches (25 cm.) in length, the distance from the incisor teeth to the stomach being 40 cm. It originates from the pharynx at the level of the cricoid cartilage, opposite the intervertebral disc between the fifth and sixth cervical vertebræ, passes down in front of the spine, whose curvature it follows even in kyphosis and lordosis, and curving to the left passes through the diaphragm, and about 2 cm. lower it joins the stomach. The potential diameter is from 20 to 14 mm., the latter being its size at the three narrow points, at the cricoid, at the bifurcation of the trachea, and at the diaphragm. The wall has a muscular coat of two layers, an outer longtitudinal and an inner obliquely circular; in the upper part the muscle is striated, in the lower plain. It is lined with a stratified pavement epithelium, which in the empty state falls into longtitudinal folds. It has throughout racemose mucous glands, with ducts passing up through the muscularis mucosæ, but has also another type, the glands of Schaffer, which are comparable to those found in the cardia of the stomach. These are situated at the upper and lower ends.

The nervous supply is received from the vagus, its recurrent laryngeal branches passing up in relation to the œsophagus behind, and the two main trunks passing down, the left in front and the right behind, giving branches to form the "plexus gulæ"; in addition to this there is a supply from the sympathetic. Swallowing has been studied by the x-ray, and, apparently, the mass of food is first shot rapidly by the mylohyoids and other pharyngeal muscles through the upper part of the tube—the squirting action—dropping then by gravity to the lower part where it gathers in a cone-shaped mass, to pass more slowly through the cardia. A chain of reflexes is set up and a peristaltic type of contraction ensues, apparently due to the existence on the wall of sensitive points, stimulation of which initiates peristalsis. The integrity of the nervous supply is necessary to rhythmic action, and bulbar lesion or interference with the continuity of the nerve connection results in disorder of the mechanism and choking with regurgitation.

Affections of the œsophagus are many, but in this paper attention will be confined to those commonly met with, *viz.*, spasm, simple stricture, diverticulum and carcinoma, and treatment will not be described in detail.

FUNCTIONAL DISTURBANCE

Disturbance of function is common in emotional states, shock, fright, etc., when the sensation of "swallowing the wrong way" will be experienced. In some diseases affecting the bulbar area or the nerves of supply and in children or nervous adults, spasm, temporary and intermittent, may be troublesome; this so-called spasm of the cardia may also occur as a sequela of cardiac disease or gall-bladder affection.

But the outstanding example of mal-function is cardiospasm, which has a well recognized and fairly constant symptomatology, and has been long known and often described. While the condition may be due to a congenital defect, symptoms are usually noted first in adult life, beginning with a sensation of difficulty in swallowing some particular articles of food, and increasing to a real dysphagia, followed by the occurrence of regurgitation and distress that may amount to spasmodic pain. There are periods of normal function which tend to become shorter, although the history may cover years. Fluoroscopic examination will show a dilatation above a constriction situated at the lower end of the tube and with smooth walls; the dilatation increases till it may reach a large size. Pathological change is chiefly seen in the dilated part, the stricture being a functional one, though quite resistant. As the dysphagia and regurgitation become more determined there may be cachexia from worry and malnutrition, and the picture may suggest carcinoma, from which, even with the history

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and an x-ray, it may be hard to differentiate it with certainty.

Treatment is by dilatation, and the method used by Plummer, with a hydrostatic dilator, has been successful in over 500 cases with two deaths. Repeated dilatation may be required at intervals. In some cases the sac is so large that the inferior orifice lies to one side and a dilator cannot be safely engaged. It is then necessary to approach it from below through the stomach.

Benign Stricture

Benign stricture of the œsophagus is usually caused by swallowing some corrosive, though it may result from laceration by a sharp object or from an external wound. Vinson reports 186 cases. Lye was the cause in 102; typhoid ulcer in 14; vomiting of pregnancy in 13; 7 were congenital; and 18 of unknown origin. The history will give a clue to the cause of the trouble. When this is lacking, and dysphagia leads to x-ray examination, the ragged appearance of the stricture may simulate cancer, but when due to corrosives the upper part will be most affected and the stricture will be multiple.

The treatment is dilatation and this will probably have to be repeated at intervals throughout life. The routine advised by Vinson for the case seen immediately after swallowing a corrosive is as follows. At first olive oil is given; for some days no food can be taken, and fluids by the rectum are needed. When the patient can swallow fluids he is instructed to swallow, at the rate of one foot an hour, six yards of twisted silk thread, and when this is believed to be engaged in the intestine by the resistance felt to withdrawal, there is knotted to it a strong bass-line, and the swallowing goes on till this also has become engaged. The silk thread being cut off as it emerges from the anus, the bass-line is fastened and left in place till about six weeks has elapsed, when secondary cicatrization will have set in and the surface healed. Dilators are now passed using this strong line as a guide which ensures the tip of the instrument, which is threaded over it, engaging in the track through the strictures.

Diverticulum

Diverticulum of the œsophagus is of two kinds —pulsion and traction diverticulum. Both are uncommon but the latter is decidedly rare. Pulsion diverticulum always occurs at the same level, bulging out from what is called the pharyngeal dimple, a triangular area on the posterior wall of the pharynx bounded above by the lowest fibres of the constrictor and below by the oblique fibres of the cricopharyngeus. This is apparently a weak place in the wall. The development is a process of slow herniation and the symptoms vary with the stage of enlargement. At first, there is a slight sensation of food sticking, and a desire to relieve this by hawking, with the expectoration of white, frothy mucus containing food particles; then more definite difficulty in swallowing, until the sac which is now present, is filled with food, a sense of fullness remaining as if swallowing had been incomplete. Now by hawking, assisted by pressing on the side of the neck, which is attended by a definite gurgling sound, an ounce or two of food with mucus will be brought up into the handkerchief. In the later stage the sac is large and is dependent. Filling with food, it drags on the wall so that its opening is no longer lateral but direct, and the lower orifice of the œsophagus itself is narrowed and displaced, so that there is real obstruction. The sac may pass down till it is behind the manubrium sterni and there is a definite sensation of pressure and fullness, even affecting the trachea and causing cough and huskiness of the voice. When emptied large amounts of fœtid, stale material are obtained. The patient suffers from constant discomfort, is nervous and irritable, and will not eat at table with others. There is progressive malnutrition from regurgitation and obstruction. The x-ray picture is characteristic; a sac of rounded pouch-like shape, posterior and always to the left of the œsophagus, is seen. The earlier phase is hardly demonstrable.

The treatment is removal surgically and the two stage method used at the Mayo Clinic, and by Lahey, among others, done under a local anæsthetic, has practically no mortality, the danger from leakage and resultant mediastinal infection being obviated. When possible, the patient is fed through a Rehfuss tube, which is swallowed before operation and kept in place till after the second stage and healing are complete. Occasionally, dilatation has to be

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performed afterwards at intervals of some months, but the risk from operation is so small and the results so satisfactory, and the course of the untreated diverticulum is so definitely progressive, that removal should be undertaken as soon as the diagnosis is made. A typical history is as follows:

CASE 1

Mr. C,, aet. 62, had noticed for some time the presence of mucus in the throat, non-purulent, which led him to consult a throat specialist, but treatment had no effect. He noticed then that there were particles of food brought up with the mucus and examination of the pharynx showed this to be coming from the œsophageal opening. X-ray showed the shadow of a diverticulum with a diameter of over an inch. As he had little inconvenience he did not agree to operation, but the symptoms increased and he found difficulty with solids. He would bring up a mouthful of food at each meal and soon would not eat in public. His nutrition was not affected, but he was nervous, worried, sensitive, and troubled with cough. A second picture, taken nine months after the first, showed some increase in size and he consented to operation, which was performed as described with a satisfactory result, no dilatation being required, and no abnormal sensation remaining.

Traction diverticulum occurs as the result of adhesions to the wall of the œsophagus, occurring in the course of healing of broken-down glands adjacent to it. It is seen in the thorax usually near the tracheal bifurcation, and is discovered accidentally, but may be the cause of dysphagia and symptoms of obstruction. I am indebted to Dr. Norman Gwyn, of the Toronto General Hospital, for the following history:

CASE 2

M. E., adult, had chronic cough for two or three years. X-ray showed a calcareous deposit in the lymph-nodes in the right upper posterior chest. Some difficulty in swallowing suggested x-ray of the œsophagus and a small traction diverticulum in this area was apparent.

CARCINOMA

This accounts for 95 per cent of cases of obstruction of the œsophagus, and so is always a presumptive diagnosis. From 1911 to 1920, according to Wright of Bristol, there were 15,909 deaths in England and Wales from this condition; of these 12,059 were in men, a preponderance which is hard to explain. The clinical history varies in detail and the disease is usually well advanced before regurgitation of food brings the patient for examination, and the expectation of life from this time will be about 4 to 5 months. A history will be elicited of pain and dysphagia. An intelligent patient will often describe a sense of uneasiness amounting to pain and dysphagia, precordial or substernal, the existence of which can be recalled for many months, often constant but associated particularly with swallowing. He will mention a feeling of a lump, or a sticking of food when solids are taken, and an increasing habit of helping solid food down with a drink. If he is less observant he may fix it all by a definite experience of something having choked him. At first, the obstruction is noted only for solids, then for semi-solids, and eventually for fluids, but by this time regurgitation will have taken place, the food returned being unchanged, and milk uncurdled. Although described as vomiting, careful observation will reveal its true character. The diagnosis in the ordinary hospital case will be apparent from the symptoms, dysphagia, probably pain and regurgitation of food, with rapid emaciation in the later stages, and cough with a great deal of mucus. X-ray with a thick mixture of barium will usually give a characteristic picture of the irregular eroded wall, of a narrowed lumen with a dilatation above it, but where the growth is eccentric and situated in the wall there may be only a stricture seen. A complete picture of the tube may be got by having the patient lie in the Sims' position and suck up a thick mixture through a tube. The extent of the stricture may be tested with a dilator using the swallowed string as a guide, and direct vision with the œsophagoscope may show a typical appearance of the growth, and permit the removal of a specimen for examination, but this manœuvre is not without risk and the specimen may not be of the neoplastic tissue.

Treatment can be only palliative, relief of pain when present by morphine, the selection of suitable forms of nourishment, the giving of emollients, and the use of belladonna to relieve spasm. Commonly, the dysphagia will vary from time to time. Complete obstruction for a day will be followed by a period when at least semi-solids can be taken. The obstruction here, as in all carcinomatous strictures, is incomplete, there is an element of spasm and the surface is sloughing. Dilatation is successful in re-establishing function in some cases, using the string as a guide, and some patients will be able to swallow for weeks after treatment; it is not dangerous when this method is used, but often a tumour mass will block the dilator. Soutar, at the London Hospital, passes a tube with a collar through the stricture after dilatation,

leaving it in place, and reports 50 cases out of 100 in which he was successful in maintaining a viable opening.

Gastrostomy is always a feasible means of providing a route for alimentation, and in the case where the general state of the patient is good, obstruction is obstinate, and he is suffering from hunger and thirst, it is justifiable, but the mortality is 20 per cent. Direct surgical attack could be possible only in a limited number of cases, and it is attended by an almost insuperable difficulty and an unjustifiable risk. The growth occurs at three points: 31 per cent at the upper end, often associated with a growth in the larynx; 53 per cent in the middle area; and 16 per cent at the lower end. It is usually squamous-celled in type, but occasionally it is an adeno-carcinoma originating in the cells of Schaffer. The following case illustrates some of the points mentioned:

Case 3

E. G., aet. 49, admitted to St. Michael's Hospital on October 25, 1928. Choking and vomiting of solid food began suddenly two years before. He could not eat solid food for two days, then was free from trouble for a year, when the same signs appeared if he hurried, and he had to drink water to get the food down. By September, 1928, he could take no solid food and he noticed the collection of mucus which cleared by coughing. He had had syphilis 25 years ago, with four years' treatment. The Wassermann test was negative six years ago and on admission. A large hard gland was seen on the left side of the neck.

X-ray showed a characteristic picture of carcinoma of the œsophagus in the middle third.

Anti-syphilitic and deep x-ray treatment were given. On November 16th he could take no food; even water regurgitated, but on November 23rd it was noted that he could take water; on November 25th soups; on November 27th semi-solids; on the 29th solids.

On December 3rd dilatation was attempted, through the kindness of Dr. E. Cleaver, but failed, a firm mass blocking the passage. By December 16th he was still taking food, but there was regurgitation with a great deal of mucus and continuous pain, and there was a dull area in the lower part of the left chest. By December 29th he was again unable to swallow anything. He complained bitterly of hunger and thirst, so a gastrostomy was done under local anæsthesia, but the patient died the next day.

Carcinoma of the cardiac end of the stomach may be the cause of obstruction at the outlet of the œsophagus and regurgitation of food which has not entered the stomach. X-ray may show a normal or somewhat dilated tube with delay, but without revealing the real cause, as the cardiac end of the stomach is not visualized in the ordinary gastric series, the barium meal not distending this part. Under such circumstances, with general symptoms pointing to cancer, the examination should be repeated, to clear the diagnosis. As an example, I might cite the following case:

Case 4

P. M., aged 72, who told of pain in the abdomen for twenty-one months, with occasional vomiting and loss of weight and anæmia. A gastric series in March was negative, but the condition was progressive, with difficulty in swallowing and regurgitation by October, and a palpable epigastric mass by November.

Evidently there was here a cancer of the cardia, extending to and involving the œsophageal opening.

Otitis Media and Its Relation to Gastro-Enteritis —A study of gastro-enteritis in infants under 2 years of age and its relation to otitis media has been carried out over a period of two years in Cincinnati by A. Graeme Mitchell, Merrick F. McCarthy, John W. Leichliter and Frank Seinsheimer. Collaborating in this study were otologists, bacteriologists and pediatricians. There are several actual and contributory causes of gastro-enteritis. No one cause seems sufficient in itself to explain in an etiological way all cases that are ordinarily classified as gastro-enteritis. The majority of infants in this study suffering from gastro-enteritis did not have middle ear infection preceding the gastro-intestinal symptoms. In comparing the seasonal incidence of gastro-enteritis and of otitis media and respiratory infections in general, it seemed evident that gastro-enteritis was a condition occurring at a season of the year (July, August, September and October) when otitis media was not so prevalent. However, a surprising number of cases of otitis media occurred during these months in infants. The majority of infants suffering from otitis media and brought for admission to the hospital primarily for that condition did not have, and did not develop, gastro-enteritis. In those cases in which otitis media occurs in infants suffering from gastro-enteritis, the authors have suggested that there might be four possible explanations: (a) The gastro-enteritis might be caused by middle ear infection; (b) the middle ear infection might be caused by the gastro-enteritis; (c) gastro-enteritis and middle ear infection might result from the same cause, or (d) gastro-enteritis and middle ear infection might be independent but co-existing infections. While they do not wish to make a definite statement concerning this matter, they have brought out certain clinical studies, bacterial investigations and theoretical considerations which would indicate that no one of these situations mentioned is the only possible explanation in every case. The authors believe that, when mastoid antrotomy is properly performed on infants who have severe gastro-enteritis, the factor of operation does not materially increase the mortality risk.—*J. Am. M. Ass.* **92:** March 23, 1929.

XUM

THE PRESENT STATUS OF THE ROENTGENOLOGICAL DIAGNOSIS OF GALLSTONES*†

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AS recently as 1922, a very well-known textbook on surgical diagnosis declared that in the detection of gallstones little help can be expected from roentgen examination. This statement, though inaccurate, apparently represented the attitude of the average clinician both in Europe and America five years ago. The facts, however, were quite different, even in 1922.

Following the pioneer work of Carl Beck[1] (New York), who in 1900 reported several cases of gallstones discovered with the x-ray, including one notable case of *situs inversus* with gallstones on the left side, all confirmed by operation, no studied effort was made to distinguish gallstones roentgenologically in a routine manner until the writer's first published paper on this subject in 1913[2] and the paper by L. G. Cole,[3] prepared simultaneously, but published a few months later. Both Pfahler[4] and Haenisch,[5] at the 1910 meeting of the American Roentgen Ray Society in Detroit, published several cases, and the writer displayed in the Scientific Exhibit seven or eight roentgenograms of gallstones *in vivo*, several of them stereoscopic.

In 1913, the writer displayed in the scientific exhibit of the American Medical Association in Minneapolis in May and at the International Congress of Medicine of London in August, 48 cases of gallstones found in the routine roentgen examination of 1,000 consecutive barium-meal studies. In some of these 1,000 cases gall bladder disease had been suspected, but the series included all sorts of gastro-intestinal and urological cases, in many of which there had been no thought of gall-bladder disease.

This series represented a fair cross section of the gastro-enterological service of the Battle Creek Sanitarium at that time; and after careful study of postmortem records in the larger clinics of the United States and Europe, we ventured the estimate that possibly 100 of the 1,000 cases were carriers of gallstones, and that we had discovered 40 per cent of them by means of the x-ray. It is a very interesting coincidence that L. G. Cole,[6] who had been simultaneously investigating the possibility of the roentgen-ray diagnosis of gallstones, read a paper this same year (published in 1914) in which he reported the discovery of 20 cases of gallstones in a series of 500 consecutive gastro-intestinal cases, the proportion closely approximating that found in our own series of 1,000 cases.

In the writer's later statistics, covering a much larger series, positive roentgen findings of gallstones were secured in 4.5 per cent of more than 5,000 consecutive patients examined for suspected disease of the gastro-intestinal tract, lumbar spine, or right kidney. Later, we analyzed 300 consecutive abdominal operations in the course of which the gall-bladder was examined, and in appropriate cases given surgical attention, and in which a written preoperative statement had been made as to the presence or absence of positive gallstone shadows. We found that in 49 per cent of the cases where gallstones were discovered at operation they had been preoperatively correctly diagnosed with the x-ray. In our third series of 203 consecutive gall-bladder operations, stones were found in the gall-bladder at operation in 192 cases. Of these, a correct preoperative x-ray diagnosis of stone, based on the finding of positive shadows, had been made in 99 or 51.5 per cent.

A number of other roentgenologists had

* Revised from a paper read before the Fifty-eighth Annual Meeting of the Canadian Medical Association, Section of Radiology, Toronto, June 16, 1927; much abbreviated.

† Received for publication, January 29, 1929.

meanwhile become greatly interested in these studies, notably George and Gerber,[7] Knox,[8] Haenisch,[9] and Kirklin,[10] and encouraging reports were numerous; nevertheless many eminent clinicians remained very skeptical of the value of the roentgen examination in gallstone disease. One of the most prominent of these skeptics was the late R. D. Carman, but in 1923, in conjunction with McCarty and Camp, he gave the method a thorough trial. His published results were as follows[11]:

TABLE I—CARMAN'S FIGURES ON GALLSTONES (1923)

	Cases
Found at operation	226
Diagnosed by x-ray	87
Not diagnosed	139
Found by x-ray	38.4%

It is apparent, therefore, that we may expect with ordinary routine technique to demonstrate positive shadows of the calculi by direct x-ray examination in at least 30 to 40 per cent of the cases of gallstones.

In 1915, the writer published[12] some investigations on the percentage of lime salts necessary in a gallstone to permit its roentgenological discovery *in vivo*. In the cases where gallstones were present, yet not recognized by our x-ray examination, the highest percentage of calcium oxide in relation to the total weight of the stone was 0.30 per cent; that is, the highest proportion of lime oxide in relation to the total weight of the stone in the invisible calculi was less than one-third of one per cent. Of the positive cases, a number of analyses were made of stones which cast shadows very difficult to recognize, seen only upon very careful oblique illumination of the roentgenogram. The lowest proportion of calcium oxide in relation to the total weight of the stone in these cases of faintly visible calculi was 0.425 per cent, or a little less than one-half of one per cent.

From the purely roentgenographic standpoint, cases of cholelithiasis fall under three heads:

1. Those in which the gallstones consist entirely, or almost entirely, of pure cholesterin, and are therefore invisible on the direct roentgenogram.

2. Those in which the large lime-content of the gallstones renders it almost impossible to overlook them, even during the most careless examination. Such stones as these can easily be made out fluoroscopically.

3. Those in which the lime-content of the stone is relatively low and the stone can be made out only by means of the most careful technique. It is in this third class that success or failure to secure as nearly as possible ideal roentgenograms marks the success or failure of a diagnosis based on direct finding of a positive stone shadow.

It is, therefore, apparent that up to February, 1924, when Evarts Graham and his colleagues[13] published their first communication on cholecystography, we were dependent upon the presence of calcium in gallstones for their roentgenological recognition and upon certain indirect signs of gall-bladder disease which were none too convincing.

Cholecystography has proved a most welcome aid in the diagnosis of gallstones and has within three years permitted us to advance the percentage of correct diagnosis in cholelithiasis from 35 or 40 per cent to 95 per cent, as will be shown by tables presented at the close of this article.

The writer began the use of Graham's method on June 24, 1924, and has up to the present moment (July 1, 1928) made about 2,500 tests, all but 30 or 40 of which have been done by the intravenous method, employing tetraiodophenolphthalein. From this series 277 consecutive cases which have come to operation have been selected for analysis.

After the injection the patient is caused to lie down for fifteen minutes. The evening meal may be taken, but the patient is asked to confine the diet to carbohydrates (fruits, fruit juices, sugar, rice, potatoes, lemonade), excluding fats and proteins. The patient is usually requested to go home and go to bed for the evening.

Before breakfast, at eight o'clock the next morning, fourteen or fifteen hours after the injection, the patient appears at the roentgen department at which time two 20x24 centimetre films of the gall-bladder region are taken. These are developed at once to make sure that they are technically satisfactory. The patient is then allowed to go to his breakfast, eating whatever is pleasing, but including in the breakfast milk or cream and an egg yolk. It is our custom to let the patient return at twelve o'clock for two more films. We thus have four films, two made at the fourteenth hour before breakfast and two at the eighteenth hour, approximately three and a half hours after a

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breakfast containing fats. By the foregoing technique the patient can follow his usual program in the day, any discomfort or disagreeable symptoms having occurred the evening before.

Excellent clinical results following employment of the oral method have been reported by numerous authors, including Menees,[15] who first suggested the oral administration, Stewart,[17] and others; but the writer has preferred the intravenous method for various reasons, chief of which is the fact that most of our cases for Graham's test had already been given by the oral method with indecisive results.

The intravenous method has the very great advantage over the oral in that a definite dose of the dye has been positively introduced into the blood stream, there being no question of failure of capsules to dissolve, incomplete absorption of dye, etc.; under these conditions failure to obtain a gall-bladder shadow is therefore very significant and to be definitely interpreted.

In reporting on cholecystographic examinations the writer has devised the following terminology: "Stone Positive;" "Absence of Shadow;" "Pathological, Noncalculous;" "Normal." These will be considered seriatim.

Stone Positive

With the Graham test gallstones show as negative shadows. If the gallstones cast positive shadows, thanks to their lime content, the Graham test is quite unnecessary, except as a means of identifying certain shadows which may not clearly represent gall stones. Stones containing no lime, or too little lime to cast positive shadows, are recognized with the Graham test as vacant or negative areas in the shadow of the gall-bladder. Gas in the colon, and especially gas in the duodenum, may cause considerable confusion in the interpretation of such vacant areas lying within the outline of the gall-bladder. It is especially important in such cases to repeat the x-ray films after the patient has been sent for cleansing enemas. In making these renewed studies, the x-ray tube should be tilted in such a manner as to throw the shadow of the gall-bladder into a different relation to the shadow of the colon or spine. A faint gall-bladder shadow overlying the spine could be overlooked. Gas retained in the duodenal bulb may, on account of the natural contours of the collapsed duodenum, greatly resemble the faceted appearance of a negative stone shadow. Sacculations of the gall-bladder caused by pericholecystic bands, especially when these adhesions occur about the neck of the gall-bladder, may cause error by retaining small "puddles" of dye after the gall-bladder has been otherwise emptied. A papilloma or other tumour on the skin lying next to the film may cast a shadow sufficiently dense to cause confusion. Tyson[18] has reported a case of metastatic hypernephroma within the gall-bladder which quite likely would have led to a diagnosis of gall-stone, if the case had been submitted to cholecystography.

Up to November 15, 1927, there have come to operation in our surgical service 77 patients in whom a preoperative Graham test report of "stone positive" had been made. There were three errors; one due to sacculation of the gall-bladder; the other two were due to calcareous deposits in the gall-bladder wall.

Absence of Shadow

Failure to discover a gall-bladder shadow following the administration of the Graham test, especially when the dye has been given intravenously, constitutes the most convincing, reliable and important evidence of disease of the biliary tract. Normally, the dye containing bile passes freely from the common duct into the gall-bladder, where it attains a concentration so pronounced that the shadow of the gall-bladder clearly shows in the roentgenogram. This concentration of the gall-bladder bile has been variously estimated as being four to twelve times denser than the common-duct bile. When, after careful study, we fail to perceive the shadow of the gall-bladder, we are then convinced that one or more of a number of causes have been operative to prevent visualization of the gall-bladder. The following may be mentioned as the most important causes, an effort being made to list them in the order of their probability:

1. Cystic duct obstruction. This may be due to a stone impacted in the cystic duct or in the neck of the gall-bladder or, less frequently, kinking, or other form of obstruction of the cystic duct due to adhesions; infiltration of malignant disease in the neighbourhood; or pressure of an extra-biliary tumour.

2. A gall-bladder filled with stones and its mucosa damaged to such an extent that the concentrating function is interfered with.

3. Failure of the concentrating function in a stone-free gall-bladder, the failure being due to disease of the wall of the gall-bladder interfering with the glandular activity.

4. Stones or other obstruction of the common duct. Because the gall-bladder is not able to empty itself there does not occur the normal interchange between the dye containing bile and the bile which is free from dye. The result is an absence of the gall-bladder shadow.

5. Organic disease of the pancreas or liver, or both, such as carcinoma, hepatic cysts or abscesses, or advanced hepatitis.

6. Failure of the patient to follow instructions not to eat fat until a certain period has elapsed after the injection.

It is possible to completely nullify the value of the Graham test by either the oral or the intravenous method if the patient does not adhere strictly to instructions regarding a carbohydrate evening meal. Therefore, in all cases, in which we have a report "absence of shadow" we carefully interrogate the patient with reference to dietetic faults, contrary to instructions, believing that these dietetic faults explain the few errors which we have encountered in checking up our results on "absence of shadow" reports.

TABLE II—"ABSENCE OF SHADOW"

Total number of cases operated	79
Stones found present (73.4%)	58
No stones found (26.6%)	21
Errors (normal at operation) (2.5%)	2
Reliability in finding gross disease of biliary tract	97.5%

An analysis of the 21 noncalculous cases where "absence of shadow" was reported is given in the following table:

TABLE III—"ABSENCE OF SHADOW"

Total cases checked at operation	79
Gallstones present	58
No stones found in	21
In these 21 cases, the diagnosis was as follows:	
Carcinoma of pancreas or common duct	5
Abscess of liver	1
Cirrhosis of liver	2
Chronic pericholecystitis, adhesions especially about gall-bladder neck	5
Papillomatous gall-bladder	1
Chronic cholecystitis, fibrosis of walls, thick, black tarry bile	5
Cause of "absence of shadow" not apparent, normal bile being found in gall-bladder	2
	21

The two failures to visualize the gall-bladder referred to in the last line of the above table were evidently cases of error. Interrogation of the patients led us to believe that the error was due to failure to follow our dietetic instructions.

"Absence of shadow," therefore, signifies gross disease of the biliary tract with only 2.5 per cent probability of error. In 73.4 per cent of the cases, stones were found at operation; in 87.3 per cent of the cases gross disease, either stones or other lesions, in the gall-bladder itself; in 10.1 per cent, gross disease of the biliary system outside of the gall-bladder. Cases of jaundice almost invariably give "absence of shadow" and we no longer give the Graham test in cases of definite jaundice.

PATHOLOGICAL; NONCALCULOUS

It is recognized that a great many diseased gall-bladders do not contain stones. For instance, in a recent series of 900 cases of cholecystectomy, reported by John B. Deaver,[19] about half of the gall-bladders which he removed and which were carefully studied did not contain stones. There are also, no doubt, many cases of disturbance of the gall-bladder, such as chronic pancreatitis, associated with atony of the gall-bladder walls and passive stagnation of bile in the gall-bladder.

We therefore ventured to commit ourselves in writing to a diagnosis of "pathological noncalculous" gall-bladder in a large series of cases where we found the gall-bladder shadow definitely to deviate from the normal in one or more of the following particulars:

(a) The gall-bladder shadow normal in outline, but deficient in shadow intensity, or slow in emptying, or both.

(b) The gall-bladder shadow constantly irregular in such a way as to indicate pericholecystic adhesions without disturbance of concentration or emptying.

The following tabulation shows our findings in 85 such cases checked at operation.

TABLE V.—"PATHOLOGICAL; NONCALCULOUS"

Total number of cases checked at operation	85
Pathological gall-bladder in	71
Normal gall-bladder on palpation and inspection	14
Value of test in finding diseased gall-bladder	83.6%
Number of cases in this series with stones found at operation	6
Value of report toward exclusion of gallstones	93 %

It will be noted that in the above table there were 6 cases showing stone at operation. In

all these cases, the stones were small; in several of them, one single small stone, the size of a rice kernel. If we had not tried to exclude cholelithiasis in this group, our accuracy would have been greater than the 83.6 per cent reported.

NORMAL

Normal Graham tests were reported when the outline of the gall-bladder appeared at the fourteenth hour with normal contours, normal uniform density, and normal emptying; that is, having nearly, if not completely, evacuated the dye within three hours following the ingestion of a breakfast containing fat (a breakfast of the patient's choice, including, however, the yolk of two eggs or a glass of half milk and half cream, preferably both.)

Up to November 15, 1927, there had come to operation in the surgical service of the writer at the Battle Creek Sanitarium 36 cases in which a preoperative Graham test report had been reported as "normal." Ten of them were subjected to cholecystectomy in spite of the "normal" report, either because of suggestive symptoms, or because earlier in our work we did not know how much to depend upon such an interpretation. Prof. A. S. Warthin, of the University of Michigan, examined all these cases, pronouncing 7 of them normal and demanding to know why they had been removed; in 3 he reported chronic cholecystitis, but in none was the disease of an advanced grade. Therefore, on the basis of cases actually removed and examined microscopically, the "normal" report is worth 70 per cent toward excluding disease of the gall-bladder; but, judging by the commonly accepted surgical and gross pathological criteria of noncalculous cholecystitis, we were able to exclude cholecystic disease in twenty-three further cases of this series. For excluding gross disease of the gall-bladder, then, the test was worth 83.4 per cent.

Special attention should be drawn to the fact that no gallstones were found in any of the thirty-six cases with "normal" Graham test report which came to operative check. This fact will be discussed further in another paragraph (Table VI).

VALUE OF THE GRAHAM TEST IN CHOLELITHIASIS

We have in this series of 277 cases a total of 121 reported "noncalculous." Table VI sets forth the reports following Graham's test on these cases.

TABLE VI—VALUE OF GRAHAM TEST TOWARD EXCLUDING CHOLELITHIASIS

Total cases reported "noncalculous"	121
Of these, the Graham test report was	
"Normal" in	36
"Pathological, noncalculous" in	85
At operation, stones were found in	6

Error 4.9 per cent. Reliability 95.1 per cent.

Toward the confirmation of a diagnosis of cholelithiasis, we also have some valuable data, based upon 138 cases of this series where the gall-bladder operated upon contained gallstones as shown in Table VII.

TABLE VII—VALUE OF GRAHAM TEST TOWARD THE DIAGNOSIS OF CHOLELITHIASIS

Total number of operated cases with stones	138
Of these cases, the Graham test report was	
"Absence of shadow" in	58
"Stone positive" in	74
"Pathological, noncalculous" in	6
"Normal" in	0

Error 4.3 per cent. Reliability 95.7 per cent.

THE PRESENT VALUE OF THE X-RAY IN THE DIAGNOSIS OF GALLSTONES

In reviewing the facts presented in the foregoing pages, it is evident that in spite of the skepticism of the early diagnosticians, the x-ray method has for fifteen years or more been of considerable value in the diagnosis of gallstones. In between 30 and 40 per cent of the cases of cholelithiasis, the stones contain lime sufficient to cast a shadow and may therefore be discerned by the ordinary examination. With the introduction of the Graham test, vastly superior results are obtainable, and it may now be stated, based on the operative data included in the foregoing pages, that the Graham test when positive for stones is worth 95 per cent; when negative for stones, it is worth 95 per cent.

SUMMARY

1. Our experience shows that in 95 per cent of the cases of cholelithiasis, one at least of the following definite x-ray signs should be present:

(a) Stones visible by direct x-ray examination without resorting to the Graham test (such stones contain lime sufficient to make positive shadows).

(b) Stones visible by negative areas in the cholecystographic shadow.

(c) Failure of the gall-bladder to be visualized after the Graham test by the intravenous method.

2. Summarizing the entire 277 cases which represented our personal operative experience on Graham-tested patients up to November 15, 1927, we have the following table with an average of correct reports in 90 per cent of the cases.

TABLE VIII—GENERAL VALUE OF GRAHAM TEST—OPERATIVE CHECK

Graham Test Report	*Cases*	*Error*	*Correct per cent*
"Stone positive"	77	3	96.1
"Absence of shadow"	79	2	97.5
"Pathological, noncalculous" ...	85	14	83.6
"Normal"	56	7	81.0
Total	277	26	90

3. Not for one moment would we suggest dependence upon the Graham test to the exclusion of other findings. We feel that a carefully taken history is of the greatest value in these cases, and careful attention should be given to the physical findings and other laboratory reports. It is evident that the Graham test affords us very great help, so great indeed that no surgeon should attempt to do without its aid.

4. The test also has a useful place in differentiating right upper quadrant shadows. We sometimes find in the right upper quadrant localized densities, evidently due to lime deposits, which lack the characteristic appearance of gallstones. Graham's test will often be quite sufficient to identify these shadows without the necessity of subjecting the patient to the more distressing pyelography. We recall several cases in which combined pyelography and cholecystography was done, proving that certain shadows were located neither in the kidney nor in the gall-bladder.

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POLLEN CONTENT OF STILL AIR.—W. W. Duke says a very good idea can be gained concerning the amount of pollen deposited on surfaces by exposing a greasy microscopical slide to the air for a given period of time and examining it. Pollen settles out of still air just as mud settles out of water. As a consequence, the pollen content of still air is practically nil. In fact, even in a room closed for one day, the pollen deposited in a period of twenty-four hours on a unit of surface was only 3 as compared with about 300 deposited within thirty seconds by air behind a propeller of an airplane even at a height of 3,000 feet. A closed room is a good place for the treatment of patients with pollen disease on days when the outside air is laden with pollen. There is no contra-indication to the use of an electric fan if the room is clean.—*J. Am. M. Ass.* Dec. 1, 1928.

DOCTORS' HANDWRITING.—A country doctor writes: doctors should not too readily surrender their ancient privilege of illegible writing. I have before me a typewritten prescription from a physician on the full staff of a big teaching hospital, in which prescription there are six mistakes in Latin.—*Brit. M. J.* **1:** 332, 1929.

XUM

THE DEVELOPMENT OF THE MUSCULAR ARRANGEMENT IN THE VENTRICLES OF THE HEART

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THE normal and abnormal development of the chief structures of the heart—its chambers, valves, and great vessels—is well known. The results of many workers have been collected, digested, and correlated with medicine by Dr. Maude Abbott[1] in her classic chapter in Osler's Modern Medicine. But no such information exists about the musculature of the ventricles. Only recently has an approximate agreement been reached on the arrangement of the muscle fibres in the adult heart. Knowledge of the development of this arrangement is fragmentary, and few attempts have been made to correlate it with medicine.

This paper is a short report of an attempt to work out the development of the ventricular musculature. The materials for study comprised numerous serial sections of young embryos, wax reconstructions of their hearts, and repeated dissections of embryo hearts made under a binocular microscope. The essential steps in cardiac development are passed through before the human embryo has completed its tenth week. Since it is difficult to obtain human material in abundance over such an early period, pig embryos were studied. There is no reason to suppose that the pig and man differ in any important detail in regard to early cardiac development.

FIG. 1

FIG. 2

FIG. 3

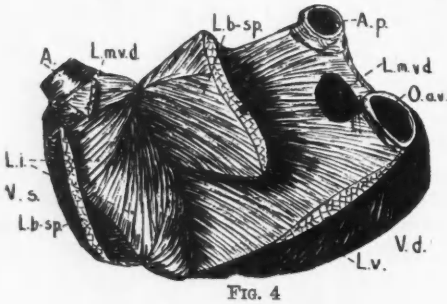

FIG. 4

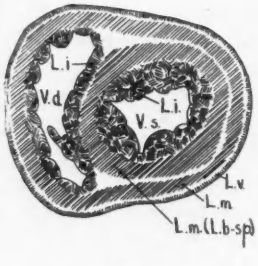

FIG. 5

FIG. 6

FIG. 1.—Adult pig heart. Anterior view, to show superficial vortex layer. FIG. 2.—Adult pig heart. Posterior view, to show superficial vortex layer. FIG. 3.—Adult pig heart, to show whorl at apex. FIG. 4.—Adult pig heart, opened along posterior interventricular groove and superficial vortex layer and deep bulbo-spiral layer cut across, to show the continuation of the vortex fibres into the inner layer of the left ventricle. A., aorta; A.p., pulmonary artery; L.b.s-p., deep bulbo-spiral muscle; L.i., inner layer; L.v., surface or vortex layer; O.a.v.d., Right atrio-ventricular canal; V.d.,s., right and left ventricles. FIG. 5.—Semidiagrammatic cross-section of heart. L.v., vortex layer; L.m., middle layer superficial part; L.m. (L.b.s-p.), deep bulbo-spiral muscle; L.i., inner layer; V.d.,s., right and left ventricles. FIG. 6.—Adult heart. Anterior view. Middle layer.

Adult Heart.—The muscle fibres of the adult pig's heart have a constant and definite arrangement. The outer surface of the two ventricles is covered with a thin layer of muscle, called the vortex layer, the fibres of which arise at the base of the ventricles and converge in a *left-handed* spiral upon the apex of the left ventricle (Figs. 1 and 2). At the apex, the converging fibres form a whorl or vortex (Fig. 3). From this point the fibres of the surface layer penetrate through the apex and spread out over the inner surface of the left ventricle. There they form the papillary muscles and trabeculæ carneæ (Fig. 4). The continuation of the superficial vortex layer with the fibres of the inner surface of the left ventricle can be demonstrated by opening the heart along the posterior interventricular groove. Such a dissection is shown in Fig. 4. The papillary muscles wind upward from the apex to the base in a *right-handed* spiral, and are inserted into the tendinous structures of the base and into the left atrio-ventricular valves.

As one can see by comparing Figs. 1 and 4, the outer vortex layer covering the two ventricles and the inner papillary layer of the left ventricle form two spirals, which join end to end at the apex. Furthermore, the spirals turn in opposite directions. In systole each spiral "winds up" the other, as one winds a clock spring. The effect of the simultaneous contraction of the two spirals is to pull up the apex and to wring out the cavity of the left ventricle, much as one wrings out a wet towel.

Beneath the outer vortex layer lies a complex middle layer. The general extent of the middle layer may be seen in a semi-diagrammatic cross-section of the heart (Fig. 5). The superficial fibres of the middle layer surround both ventricles. The deeper fibres of the layer are confined to the left ventricle, where they form a cylinder which fits over the papillary muscles.

When the vortex layer is stripped off, the superficial fibres of the middle layer are exposed (Fig. 6). They cover both ventricles. On the anterior surface of the heart the fibres pitch slightly toward the apex; on the posterior surface they run nearly transversely.

As has been said, the middle layer is much thicker in the left ventricle. Its deeper fibres form the distinct cylinder around the papillary muscles (Fig. 5). To display the cylinder, named the deep bulbo-spiral muscle by Mall, one must cut along the posterior interventricular groove through the vortex layer and the outer fibres of the middle layer. The right ventricle can then be peeled away from the left, and the cylindrical bulbo-spiral muscle exposed (Fig. 4). It has been cut in Fig. 4 to expose the papillary muscles. The cylinder can be isolated intact by a careful removal of the overlying and underlying muscle. It then appears as in Fig. 7. At the apex its fibres merge with those of the layers covering it, but a cleft uniformly appears in dissection through which the vortex fibres stream in to join with the papillary muscles.

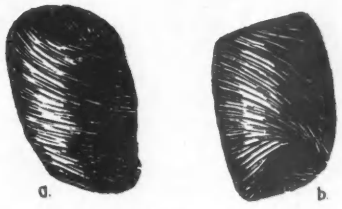

FIG. 7.—Two views of an isolated deep bulbo-spiral muscle.

So much for the left ventricle. As regards the right, it has its vortex and middle layers in common with the left ventricle (Fig. 5). The inner layer fibres of the right ventricle form a dextral spiral like that of the left. In general the layers of the right ventricle are not so well developed. They have a few peculiarities that may be omitted.

The reasonableness of the distribution of the Bundle of His is clear to one who understands the mechanism of systole. The left ventricle contracts much as one winds up the spring of a clock. For such action to proceed smoothly, it is essential that contraction begin on the inner wall of the ventricle, for were the outer layer to contract first, the inner one would be pinched. The Bundle of His is therefore distributed over the inner surface of the ventricles. It initiates systole over the inner and not the outer surface of the heart.

Development.—The youngest pig embryos, the hearts of which show any particular muscular arrangement, are 5 to 7 mm. in length. Such embryos are three weeks old, and show a tiny fore-limb and a trace of a hind limb. The heart at this age (Figs. 8 and 9) has two atria and two ventricles. The ventricles communicate through a large interventricular foramen. The

atrio-ventricular canal is incompletely divided by two endocardial cushions. Instead of a distinct aorta and pulmonary artery there is a single undivided truncus arteriosus, which leaves the right ventricle.

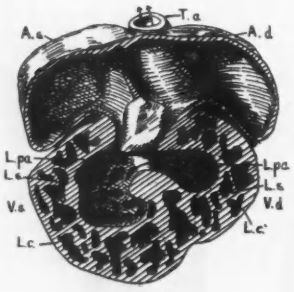

Fig 8

Fig. 9

FIG. 8.—Inside view of anterior half of a wax model of heart of a 7-mm. pig embryo. A.s.,d., left and right atria; L.c., cortical layer; L.s., sponge layer; L.pa., basket layer; T.a., truncus arteriosus; V.d.,s., right and left ventricles. FIG. 9.—Three views of a heart from a 5.5 mm. pig embryo. To show superficial fibres. a, anterior view; b, posterior view; c, apex view.

The musculature of the ventricles of the 5 to 7 mm. embryo is made up of three well-defined layers.

First, there is an outer or cortical layer which envelops both ventricles (Fig. 9), and which forms the interventricular septum. In general the fibres of the cortical layer run in a circular direction around both ventricles, the superficial fibres jumping across the interventricular grooves, the deeper ones dipping into the septum. The bulk of the septal fibres belong to the left ventricle. At the base of the ventricles, and at the apex, there is a suggestion of a sinistral spiral.

Beneath the cortical layer lies a thick sponge layer of muscle trabeculæ, which fills up most of the ventricular cavities. As yet, the sponge layer has no particular organization.

The free cavity of each ventricle is lined with a sac or basket of muscle, which can be called the basket layer (Fig. 8). Each basket finishes off the inner surface of the sponge layer, and is riddled with holes to allow blood to escape from its meshes. The basket of the left ventricle is attached to the margins of the left atrio-ventricular canal and the interventricular foramen. The basket of the right ventricle is similarly attached to the right atrio-ventricular canal, the lip of the interventricular foramen, and to the orifice of the truncus arteriosus. The whole arrangement of the 5 to 7 mm. heart (Fig. 8) is adapted to pumping blood from both ventricles out into the single truncus arteriosus. The arrows in Fig. 8 show the direction of blood flow at systole.

The heart of such a 5 to 7 mm. embryo is decidedly an embryonic affair which bears little resemblance to the adult. The only adult feature of the ventricular muscle is the slight sinistral spiral of the superficial cortical layer. This spiral is present in the smallest dissectible hearts. It appears some time before the complementary spiral of the inner heart wall. It may possibly be formed when the heart-tube is twisted in the earliest stages.

If one now turns to the heart of a 12 mm. pig embryo (24 days), a number of new features appear. The 12 mm. pig embryo is roughly equivalent to a seven-weeks' human embryo, and like it contains the critical stages of many organs.

In the heart of a 12 mm. pig embryo the single atrio-ventricular canal is divided into the two adult canals, and the atrio-ventricular valves make their appearance. The Bundle of His is present. Another striking advance is the subdivision of the truncus arteriosus into aorta and pulmonary artery. The subdivision is brought about by a lengthwise splitting of the older truncus. The dividing septum is not straight, but twisted dextrally. In consequence the aorta and pulmonary artery are wound about each other as in the adult (Fig. 10).

Corresponding to these gross changes are developments in the ventricular muscle. The simple cortical layer of earlier stages is now differentiated into a thin surface layer and a layer of coarse muscle ridges (compare Figs. 8 and 11). The other two layers are also present. There are, then, four distinct layers of muscle in the 12 mm. ventricle; the surface, ridge, sponge, and basket layers (Fig. 11).

The four embryo layers lay down the layers of the adult ventricle. The very thin surface layer can be recognized in dissections, but the

direction of its fibres cannot be made out. They probably run as do the fibres of the earlier cortical layer (Fig. 9). Beneath the surface layer lies the new layer of muscle ridges. The course of the fibres of the ridge layer can easily

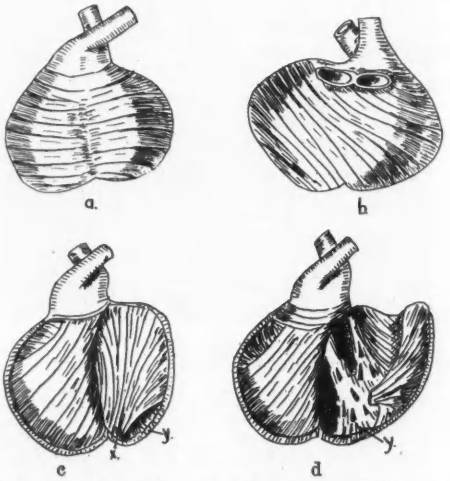

FIG. 10.—Dissections of a heart of a 14-mm. pig embryo. a and b, anterior and posterior views of the ridge layer; c and d, anterior view of the sponge layer.

be made out, and is shown in Fig. 10, a and b. The ridge layer takes on at once the characteristics of the adult middle layer (compare 10 a with 6). Along the interventricular grooves the fibres of the ridge layer dip into the ventricular septum and make up most of its substance.

Beneath the ridge layer lies the older sponge layer (Fig. 10, c and d). The sponge layer is now greatly altered. Longitudinal strands are emphasized over the rest, and the whole layer has been given a right-handed, dextral, twist. The longitudinal strands of the left ventricle converge at the heart apex (x and y in Fig. 10, c and d), where they enter the vortex and join the overlying layers.

The innermost basket layer participates in the twisting of the sponge layer (Fig. 10 d). Its most striking advance is in another direction. The atrio-ventricular valves are forming, and strands of the basket layer are attached to them as papillary muscles. The rest of the basket layer subsides into the trabeculæ carneæ of the adult heart.

With the appearance of the dextral spiral in the sponge layer, and its union with the previously existing sinistral spiral of the superficial layer, the characteristic double spiral figure of the adult left ventricle is laid down. It should be noted that the inner dextral spiral of the ventricular muscle turns in the same direction as the dextral spiral septum of the truncus

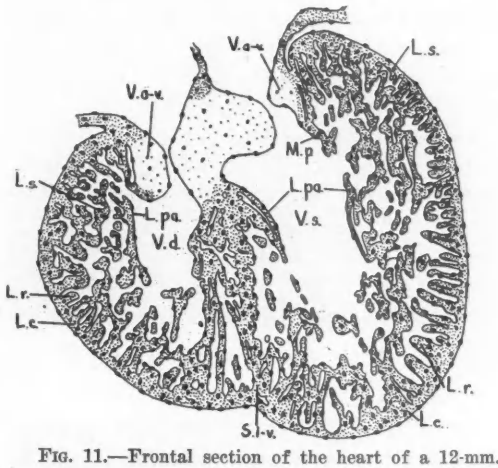

FIG. 11.—Frontal section of the heart of a 12-mm. pig embryo. L.c., surface layer; L.pa., basket layer; L.r., ridge layer; L.s., sponge layer; M.p., papillary muscle; V.a-v, atrio-ventricular valve; V.d.s., right and left ventricles; S.i-v., interventricular septum.

arteriosus which divides it into aorta and pulmonary artery. The two dextral twistings may be the result of the same cause.

Similar developments occur in the right ventricle. Here the inner dextral twist is not so pronounced, and the result is complicated by a general fusion of the sponge and basket layers to lay down the future moderator band.

The arrangement of the ventricular muscle is practically completed by the time the pig embryo reaches the length of 20 mm., and is roughly equal to a 20 mm. human embryo of nine weeks' menstrual age. In a heart of this age a bridge is laid down from the interventricular foramen to the aorta, which henceforth receives its blood from the left ventricle alone. It is not correct to speak of the interventricular foramen as closing; if it did so, both aorta and pulmonary artery would arise from the right ventricle. As regards the ventricular musculature, the superficial layer now takes on clearly and definitely the structure of the adult surface vortex layer with its sinistral spiral. The ridge layer remains as the adult middle layer, and the sponge and basket layer form the deeper dextral spirals and papillary muscles.

Space does not permit a discussion of ab-

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normal hearts. Few have been described in sufficient detail to permit analysis in terms of the above given normal development. Rokitansky long ago pointed out that a fruitful source of heart abnormalities lies in some irregularity of the spiral subdivision of the truncus arteriosus into aorta and pulmonary artery. If the cause of the spiral septum of the truncus and the cause of the spiral twist in the sponge layer are the same—the two appear at the same time and have the same direction—then one can expect that an abnormal twisting of the aorta and pulmonary artery would be associated with abnormalities in the inner spiral of the ventricles. Those who come into possession of such malformed hearts would do well to examine the spiral arrangement of the left ventricle. The superficial vortex layer ought to be normal, because its spiral is an early and independent formation; the middle and inner layers ought to show changes associated with the abnormal spiral subdivision of the truncus arteriosus.

REFERENCE

1. ABBOTT, M. E., Osler's Modern Medicine, vol. 4: chap. ix, 1908. See also later editions.

THE ADMINISTRATION OF SODIUM TETRAIODOPHENOLPHTHALEIN*

BY J. CURRIE MCMILLAN, M.D., AND DIGBY WHEELER, M.D.,

Winnipeg

SODIUM tetraiodophenolphthalein has been administered by the authors, using the following methods: (1) intravenous; (2) by capsules —single or double, (in this latter procedure the capsule is embedded in a larger capsule of sodium bicarbonate.); (3) with grape juice as a solvent.

The intravenous method was used on fifty cases, then discarded because of the frequency of severe systemic reactions, the risk attendant on any intravenous procedure, and the amount of time required.

The results of the capsular method were not satisfactory. During the period from May, 1925, to February, 1928, 852 cases were referred for cholycstography. These patients had symptoms of gall-bladder disease, and the x-ray examination was requested in order to confirm the clinical findings. Thirty-nine per cent showed the gall-bladder shadow which was considered that of a normally functioning gall bladder; 11 per cent indicated abnormality by faintness of shadow, deformity, prolonged filling time or prolonged emptying time; the remaining 50 per cent were not visible. Therefore, 61 per cent were reported as indicating "some lesion in the biliary tract." This was considered too high a percentage of diseased gall bladders. Many cases were checked and re-checked, but with no alteration in results. We wished to obtain a simpler and more accurate method of administration, feeling that many of our foreign patients could not understand the complicated directions for taking the capsules.

Levyn and Aaron* suggested the adminstration of iodeikon by dissolving it in grape juice. We tried their procedure on ten students who had previously been examined by the capsular method. A comparison of the results proved instructive.

	No. Students	*Shadow*	*No Shadow*
Capsule	10	3	7
Grape Juice	10	9	1

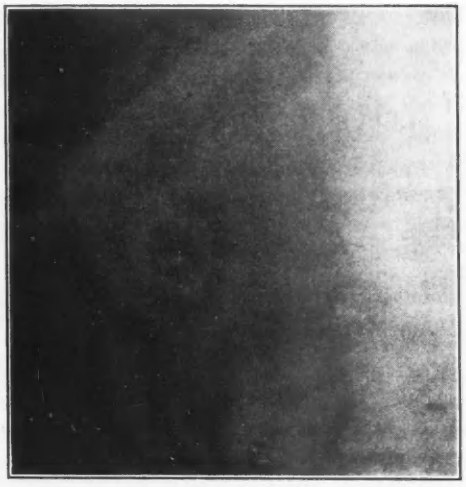
From a study of the films one notes that the grape juice method produces a denser shadow, and the dye is seen finely and evenly distributed through the colon, not caked in hard, undissolved lumps.

Since February, 1928, we have used the grape juice method as a routine in the Winnipeg General Hospital x-ray department and in our private practice. This procedure has since been adopted in nearly all the other Winnipeg hospitals, and in many hospitals and clinics throughout Western Canada, with equally satisfactory results. We are convinced that it possesses the decided advantages of simplicity,

* From the Radiological Department of the Winnipeg General Hospital.

* Levyn and Aaron, *Am. J. Roentgenol. & Rad. Therapy* **18**: Dec. 1927.

Case 1.—Fig. A.—Capsular method.



Case 2.—Fig. C.—Capsular method.

Case 1.—Fig. B.—Grape juice method.

Case 2.—Fig. D.—Grape juice method.

infrequency of systemic reaction, and accuracy in results.

We have examined 324 cases by this method: 62 per cent showed a normal gall-bladder shadow; 38 per cent no shadow, or a pathological shadow.

Method of Administration

Forty-five grm. of iodeikon are dissolved in 1 oz. of water, stirred until all lumps have disappeared, then filtered through absorbent cotton into an 8 oz. bottle. Undiluted Welch's grape juice is added to fill the bottle. The mixture is thoroughly shaken. This is given to the patient at 8.30 p.m., three hours after a light supper which has a fat content higher than normal. Twelve- and sixteen-hour plates are made the following day. Immediately after the sixteen-hour plate a lunch with high fat content is given. At 4.30 p.m. the twenty-hour plates are taken.

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Case Reports

LUPUS ERYTHEMATOSUS*

REPORT OF A CASE TREATED WITH SODIUM MORRHUATE

BY J. FREDERICK BURGESS, M.B.,

Dermatologist to the Montreal General Hospital; Lecturer on Dermatology, McGill University, Montreal

Lupus erythematosus is an acute, subacute, or chronic inflammatory disease of the skin, thought to be an allergic reaction due to the local presence of certain micro-organisms or their toxins, which eventually shows central scarring or a fine superficial atrophy. The acute disseminated variety has been shown to be streptococcal in origin, whereas the more slowly developing indolent types are usually considered to be the result of a tuberculous infection in a highly allergic person.

Prior to the intravenous administration of the various gold preparations of more recent date, the disease, particularly when it occurs in the form of large or multiple plaques, has been difficult of cure.

The following case is reported because of the response to treatment with injections of sodium morrhuate, a drug which was first suggested to me by Dr. A. M. H. Gray, University College Hospital, London, England, in dealing with lesions of the sarcoid type, with which lupus erythematosus is closely allied.

S. McI., female, aged 38, acquired, in February, 1928, one or two small, slightly irritable patches on each forearm, which during the next few months slowly became larger, and at the same time other smaller areas made their appearance. In May, 1928, when she was first seen, therapy, instituted under the belief that these plaques were lichen planus, and carried out over a period of one to two months, was of no value. No benefit being derived from other treatment, such as tonics and local applications, she was admitted to the hospital on September 5, 1928, for further observation.

On admission, she presented on the forearms, arms and sides of the neck sub-acute and chronic inflammatory plaques of varying size. These lesions were well defined, somewhat raised, slightly scaly, and the older areas presented a fine superficial pearl-like atrophy. There was no exudation and no ulceration. (See Figs. 1 and 2).

The patient was a woman of small build, rather poorly developed, and only fairly well nourished. For a period of about two months

FIG. 1.—Lesions of lupus erythematous on the neck.

FIG. 2—Multiple lesions of lupus erythematosus on the arms.

* From the Department of Dermatology, Montreal General Hospital.

prior to admission, her general health had been impaired. She felt weak and was highly nervous. General physical examination revealed no abnormal findings.

The urine showed a specific gravity of 1009, but beyond a few pus cells, had no abnormal constituents.

The blood gave a red cell count of 5,320,000, and a white cell count of 4,000. The Wassermann reaction was negative.

Examination of the respiratory system by Dr. C. P. Howard: "There is no history of pleurisy, pneumonia or hæmoptysis. There are no abnormal findings in the chest; radiographs of the chest corroborate these findings. Mantoux' test is strongly positive."

An x-ray examination of the abdomen showed no evidence of any calcified glands or any pathological bony change. X-ray examination of the teeth failed to give evidence of apical infection, but there was definite evidence of absorption and recession. No evidence of focal infection was found in the nose, throat or ears.

A small area of skin was removed under local anæsthesia and placed immediately in 10 per cent neutral formalin.

Biopsy report by Dr. L. J. Rhea, Director of the Pathological Department:—

"The microscopical examination shows the following: The epidermis is intact. Over the corium that shows the most marked lesion, there is a very definite thickening of the epithelium, with formation of a keratinous layer, which is moderately thickened. The rete pegs are numerous and vary in length and breadth. In none of the sections examined is there any evidence of malignant change in the epithelium. There are in the corium focal areas which show very marked changes. This change is characterized by an irregularly shaped band of quite densely infiltrating lymphoctyes and endothelioid cells. In most places this cellular band is sharply separated from the overlying epithelium, but in places the epithelial layer itself is infiltrated to varying extents. At one place the infiltrating cells extend out as far as the cornified layer. In the infiltrated area there are degenerative changes in the epithelium. There are also microscopical areas of œdema in the papular layer, superficial to this dense cellular infiltrate. While the band of infiltrating cells is most marked in the corium it is not limited in this anatomical location. In places cord-like bands of cells extend down into the subcutis. This is especially marked along the course of the appendages of the skin and especially the sweat glands. There are no demonstrable lesions of the blood cells, and there does not appear to be any increase of the collagen fibres. There are no giant cells present and there is no evidence of tubercle formation.

Microscopic diagnosis: Localized chronic non-specific inflammation of the skin."

With a definite diagnosis of lupus erythematosus this patient was given gold sodium thiosulphate intravenously as follows: September 17th, 0.01 grm., September 19th, 0.05 grm., September 24th, 0.05 grm.

There was no evidence during this administration of any focal reaction in or about the lesions, and no general disturbance. By her own wish she left hospital, the condition being unchanged.

She was re-admitted on October 8, 1928, after a period of two weeks. During this interval her condition rapidly became worse. Typical erythematous plaques appeared on the nose and cheeks and on the dorsum of the hands. At the same time diffuse and discrete, acute inflammatory, bright scarlet areas appeared on the soles and dorsal aspects of her feet, accompanied with some pain. (See Fig. 3). General fatigue was noted. During her first admission and in her re-admission she had a constant evening temperature of 99° to 100°. Aerobic and anaerobic cultures of the blood at this stage were negative. Pelvic examination revealed no focus

FIG. 3—Lupus erythematosus on the legs.

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of infection. Sugar tolerance test showed no evidence of delayed assimilation, but of diminished tolerance.

A bland ointment was applied to the lesions on the neck and hands and lead lotion was applied to the feet.

In view of the absence of focal activation following intravenous injection of gold sodium thiosulphate, and, further, the acute extension of the disease, it was not felt wise to continue this therapy.

She was then given sodium morrhuate (3 per cent solution) intramuscularly about every five days, as follows:—

October 15th, sodium morrhuate (3 per cent), 0.5 c.c. October 22nd, sodium morrhuate, (3 per cent), 0.5 c.c. October 27th, sodium morrhuate, (3 per cent), 1.0 c.c. October 31st, sodium morrhuate, (3 per cent), 1.0 c.c.

November 1st the patient was more comfortable. The lesions on the face, arms and feet were becoming definitely paler. She then received further doses of sodium morrhuate, 1.5 c.c. at a time, on the 5th, 11th, 16th and 21st.

On November 22nd the patient was very comfortable. There was a general fading of the skin with flattening of the plaques and the edges were less defined.

FIG. 4—Showing healed lesions with atrophy and pigmentation following treatment with sodium morrhuate.

Between December 3rd and 12th she received two more injections of 3 per cent sodium morrhuate of 2 c.c. each, and one of 3 c.c.

On December 17th the temperature was normal. There was slight roughness and erythema in the lesions on wrists. Other lesions were pretty well faded, leaving some pigmentation. (Figs. 4 and 5).

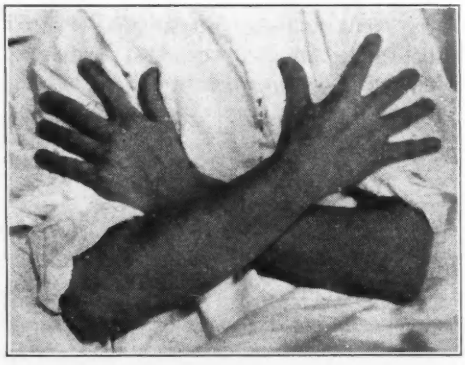

FIG. 5—Showing pigmentation only on the arms following treatment with sodium morrhuate.

She was then discharged from hospital. For a period of one month a weekly injection of 3 c.c. sodium morrhuate (3 per cent) was given. On January 15, 1929, her lesions had completely involuted, leaving a mild brownish pigmentation at the side of the plaques and a fine atrophy in some of the older, thicker areas.

COMMENT

So far as can be ascertained, sodium morrhuate has not hitherto been used in the treatment of lupus erythematosus. The case of a widespread disseminated lupus erythematosus is now reported, resulting in a cure by means of this substance. In a small experience with this drug no general reactions have at any time been encountered, and it would appear to have no toxic properties or cumulative effects.

Some other cases of lupus erythematosus at present under treatment are showing encouraging results. A further experience in the use of sodium morrhuate in cases of lupus erythematosus is needed.

A CASE OF INTUSSUSCEPTION OF THE JEJUNUM

BY W. H. THORLEIFSON

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Fort William, Ont.

S. C., a male, aged 32, was admitted on January 4, 1929, under the service of Dr. G. E. McCartney, by whose permission the case is reported.

Family History—Essentially negative.

Past History.—Born in Ireland, he came to Canada in 1912 and worked as a labourer at various occupations. He was in the army in the East. While there he had some intestinal disorder associated with diarrhœa which troubled him for three years. For the past year he had had a chronic purulent otitis media.

Present Illness.—For the week previous he had been complaining of epigastric discomfort coming on about half an hour after meals and lasting for two or three hours. On the morning of admission he was seized by an excruciating pain in the abdomen when he got out of bed. He felt nauseated at the time, but did not vomit. After an hour he took some mustard-water, which induced vomiting on three occasions. The vomitus he described as watery and yellowish in colour, but contained no solid material. The pain was not relieved but kept getting worse. He started for a doctor and collapsed on the street. When brought to the hospital he was having pains of a colicky nature that made him double up in agony. There was no radiation in any direction. The attacks would last for five minutes and pass off for another five minutes, to return again as severe as ever.

Physical Examination.—A well developed man of middle age, suffering severe pain at intervals, was restless all the time. The temperature per rectum 99°; pulse 70; respirations 30. He was pale and covered with a cold clammy sweat. The heart and lungs were normal. The abdomen was normal in shape and without distention. There was marked tenderness in the epigastrium with rigidity. Below the umbilicus he was flaccid without tenderness. For the next three hours he was kept under observation. The attacks became more severe but there was no vomiting. Pain and tenderness became more marked, so it was decided to operate, which was done seven hours after the onset of symptoms.

Laboratory Findings.—The urine was negative. Later it contained albumin and casts, but this cleared up on the third day. The leucocyte count was 26,900 per c.mm.

Operative Findings.—An upper median rectus incision was made. There was no free fluid in the peritoneal cavity. The stomach was slightly congested at the pyloric end, but there was no evidence of ulcer. The duodenum was normal. The gall-bladder was thin-walled, small, and emptied readily. There were no stones in the ducts. The small intestines were flat and normal in appearance. The appendix was normal. The large bowel was not distended and contained only a few pieces of fæcal matter. The hernial openings were normal.

Progress of the Case.—For the first thirty-six hours his progress was favourable. He then commenced to vomit large quantities of dark-brown, coffee-ground material that contained blood. An enema, given on the second day, brought a return of a large amount of a brownish fluid and fæcal matter. Repeated enemata gave similar results. All the specimens contained blood. He was given repeated lavage with temporary relief. To combat the dehydration he received 1,000-2,000 c.c. of 10 per cent glucose and saline intravenously, daily. He did not complain of pain but was restless all the time. On the fifth day the vomiting became worse. Intestinal obstruction was diagnosed but his condition did not warrant a second operation. He died early on the sixth day.

Autopsy Findings.—The heart and lungs were normal. The abdomen contained a small amount of free fluid. The stomach was dilated to hold two quarts. The duodenum was twice the normal size. The small intestines were flat and compressed. At the duodenal-jejunal juncture there was a semicircular mass about ten inches long and three inches in diameter. This proved to be an intussusception of the jejunum, with the neck of the tumour tightly applied to the flexure. About eight inches of bowel were invaginated. The contained portions were adherent and gangrenous. No cause for the intussusception could be found.

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SUMMARY

The outstanding features of this case are the lack of definite symptoms on which a diagnosis could be made; the high leucocyte count; the complete absence of anything to account for the symptoms at the time of operation; the acuteness of the case in an adult; and, lastly, the unusually high location of the lesion.

TWO CASES OF UNDULANT FEVER*

BY J. A. HANNAH, M.D.,

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As attention is being directed to *B. melitensis* and *B. abortus* infections in man both in the United States and in Europe, and, as we have reason to believe that Canada is not exempt from these affections, we think that a review of two cases which recently came to our notice will prove interesting and instructive.

These infections are characterized by continued low-grade pyrexia and general malaise. There are frequently joint pains, and there may or may not be abdominal symptoms. Weakness is present, but not to a sufficient degree to confine the patient to bed, and it is usually only on the advice of a physician that the sufferers lie up. Rigors may occur but they are not a marked feature. Sweating also is one of the symptoms; as a rule it is most marked at night.

In all cases of continued fever the possibility of such infection should be taken into consideration by the medical man. The serum should be despatched to a well equipped laboratory with the request that it be tested for specific agglutinins.

Although the infections have been observed only during the past five years, there is already a considerable literature on the subject. Those specially interested are referred to papers by Harrison and Wilson[1] and Thompson.[2]

Evans[3] appears to have been the first to prove that undulant fever in man is the same disease as infectious abortion in cattle, both being due to the organism *B. abortus* of Bang (*Brucella abortus*). She also proved that *B. melitensis* is capable of producing abortion in cattle as well as Malta fever in man, and hence that these two infections are closely allied.

Gilbert and Coleman[4] give some facts worthy of note and report twenty-one cases of undulant fever in the State of New York.

Harrison, of Manchester, England, states that 5.41 per cent of sera submitted for Wassermann reaction, which gave negative results, were positive for *B. abortus* agglutinins (*loc. cit*).

Since the work conducted and the cases reported show this infection to be prevalent in the State of New York and in England it is but natural to conclude that we in this part of the Dominion should find a similar set of circumstances, seeing that infectious abortion among cattle is comparatively common.

The following are the two cases we have to report:

CASE 1

Dr. A. G., a medical practitioner, was admitted to the Kingston General Hospital on July 29, 1928, complaining of weakness, fever and malaise.

Family and Personal History, of no special interest.

Physical Examination revealed nothing except some emaciation.

Personal History.—The history and development of his present illness was as follows. The patient dated his first symptoms from June 26, 1928, when he was carrying on his practice. Feeling ill he sought admission to the local hospital where he remained for some days. The symptoms abated to some degree and the patient proceeded to Toronto on a visit. Upon arrival there he felt incapable of carrying on and again entered hospital. The symptoms again abated and he proceeded to his home in Ontario. Shortly after his arrival he took to his bed and remained there for a fortnight. On July 16th, a Widal test was requested of the Kingston laboratory and was found positive (1/80) for typhoid. This result was disregarded as the patient had recently been inoculated against typhoid. A week later a blood film was sent in along with some urine, both with negative results. Unable to make a diagnosis, and the symptoms not abating, the practitioner sent him to Kingston General Hospital.

* From the Departments of Pathology and Medicine, Queen's University.

On admission, his temperature was 102.4°; the pulse, 72; and the respirations 20. The temperature remained above normal, with daily remissions, till August 4th, going as high as 104.8° on July 31st. On August 4th it dropped to 96.° From then until August 14th it remained between 97° and 99.8.° From the 14th until the 16th, when the patient was discharged, it remained normal. The pulse ranged between 58 and 82 and the respirations between 18 and 20 throughout his period in hospital.

Urine.—On July 29th amber coloured, acid in reaction with a specific gravity of 1022. There was no sugar, no albumin, and nothing to note on microscopic examination. On July 30th a second sample gave similar results, and the diazo reaction was negative. On July 31st a culture from the urine on Endo's medium, after 48 hours, showed small colonies of a short Gram-negative bacillus which agglutinated with the patient's serum.

Blood.—On July 29th, the red cell count was 4,930,000; per c.mm.; the white, 8,200; and the hæmoglobin 70 per cent.

On July 30th a culture from the blood, in nutrient broth with 1 per cent glucose, was made, and a culture from this on blood agar, after 48 hours, produced three small white disc-like colonies. Films from these showed an organism similar to that found in the urine.

On July 31st, a differential count of the blood cells gave polymorphonuclears, 32 per cent; lymphocytes, 64 per cent; endothelials, 4 per cent. This ratio of cells corresponds with the differential counts of other workers. No malarial parasites were found.

On August 2nd, the Widal reaction was again positive in a dilution of 1/80, a result similar to that obtained previously.

On August 4th, at Dr. W. T. Connell's suggestion, the patient's serum was tested against *B. melitensis*. The result was agglutination up to a dilution of 1/80.

A *B. abortus* antigen was obtained from the Central Provincial Laboratory in Toronto. The serum agglutinated this up to a dilution of 1/640.

An examination of the stool showed a few small colonies of a short gram-negative bacillus after 48 hours' growth on Endo's medium.

The case was one of continued pyrexia without evident cause, suggesting typhoid fever of an unusual type. The laboratory findings were complicated by the previous typhoid inoculation. The relatively low titre of the serum which did not rise as the case developed, threw doubt upon the possibility of the case being one of enteric. The positive findings against *B. melitensis* placed the case in the undulant group of fevers and the much higher titre of the serum against *B. abortus* definitely fixed the case as one of *B. abortus* infection.

CASE 2

Mr. Z., a farmer, aged 31, was admitted to Kingston General Hospital on September 20, 1928, complaining of fever, weakness and nervousness. These symptoms had been present for some weeks. No pains in the joints or abdomen were present at that time. Rigors had occurred from time to time.

Family History.—This was of no special interest.

Personal History.—He had had typhoid fever and pneumonia at the age of three; influenza in 1918; and had suffered from bronchitis and asthma for some years.

The Present Illness.—About three weeks before admission to hospital the patient began to lose his appetite. He felt weak and feverish and generally uncomfortable. The first occasion on which a rise of temperature was noted was August 25th, at which time he visited his physician and received treatment. The symptoms not subsiding, he visited another physician who sent him in to hospital.

Physical Examination—On admission the temperature was 102.3°; the pulse 95; and the respirations, 28. The abdomen showed some tenderness and tympanites. The remainder of the examination was negative.

The temperature varied between 97.1° and 103.2° (October 7th). On October 13th it was 101.1° and on the morning he was discharged (October 14th) 98.1°. There were daily remissions in the temperature, the rise coming usually in the afternoon, preceded by a rigor on one occasion only.

The pulse ran between 70 and 100, and the respirations between 25 and 28 throughout his period in hospital.

Urine.—On September 22nd, the urine was of an amber colour, had an acid reaction, and

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contained no albumin and no sugar; there was nothing to note in the microscopical findings. On September 26th the diazo reaction was negative and indican was not increased.

Blood.—On September 21st the white count was 5000 per c.mm. and the Wassermann test was negative. On September 22nd the Widal reaction was tested and showed agglutination with *B. typhosus* in 1/80; with *paratyphosus A* 1/40; and with *paratyphosus B* 1/40. On September 25th and 27th the test was repeated and showed the same result. These findings were ignored in view of the fact that the man had had typhoid and had been inoculated while in the army.

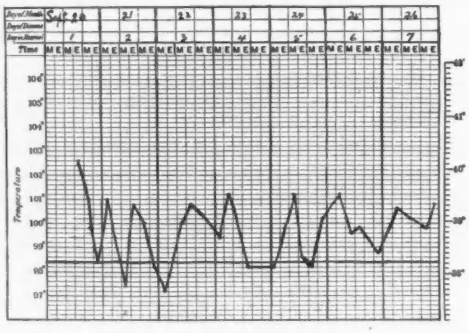

FIG. 1—*Case 2*—Temperature chart for the first week in hospital.

On September 27th the patient's serum was put up against *B. abortus* and showed agglutination as high as 1/320.

On September 28th a blood culture was negative; a stool examination was also negative.

It should be noted that the patient left hospital before his temperature was normal and against the advice of his physician. In answer to a letter the patient supplied us with a chart of his temperature (his own recording). This chart showed much the same type of temperature as when in hospital, with a gradual decrease in the daily rise until November 11th when it was normal throughout the day, and remained so with slight afternoon rises till November 18th, when it was normal all day and for the two succeeding days, the last record shown.

In this letter the patient says, "I am having considerable trouble with my feet and legs. I cannot walk without the help of a cane, the back of my legs pains me and my insteps are very painful. My heart is also weak and I am at present being treated for that."

In this case abortus infection was suspected as soon as it was found that the Widal reaction failed to show a rise in titre. The relatively high agglutination with *B. abortus* antigen confirmed this view. The patient, on being questioned, further admitted that abortion was prevalent among the cattle in his district.

A review of the literature and the finding of two cases within so short a time leads us to believe that the disease is probably more common than has been suspected and that many cases of fever running a course similar to that of typhoid, but lacking confirmatory laboratory diagnosis, have in the past been wrongly diagnosed as enteric.

Undulant fever due to *B. abortus* infection is not a dangerous disease, from the point of view of its threat to life. Whether or no it involves complications such as those found in connection with Malta fever remains to be discovered. There is, however, no doubt that it deprives the patient of his capacity to work for long periods. The first case recorded above was laid up for a period of eight weeks; the second for nearly three months. Up to the present time no treatment appears to influence the course of the disease. Abortus infection in dairy cattle is very widespread and there is at the moment no organized system of controlling it. Having regard to these facts it is all the more advisable that communities should insist upon adequate supervision of their milk supplies and an efficient system of pasteurization.

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Special Articles

HEALTH INSURANCE*

ARTICLE I.

BY J. H. MACDERMOT, M.D.,

Vancouver

This article and the succeeding one are an attempt to summarize the present situation with regard to what is termed "Health Insurance." By this term is meant the assumption by the community, through its government, of the control of sickness, its cure and prevention, on a basis of contributory payment by those insured, *i.e.*, the wage earners and those whose income falls below a standard to be decided on.

The facts and figures to be presented are based mainly on a study of the question that was carried out some years ago by the British Columbia Medical Association. This body engaged a statistical expert, Mr. Stanley Clark, who studied the subject for some three months, and prepared a very comprehensive report, which we possess. We were induced to make this survey by the action of the British Columbia Legislature, which appointed a commission to take evidence and consider the whole subject of health insurance, and the advisability or otherwise of the introduction of a measure. This commission conducted a most thorough investigation, covering some months of time, involving the questioning of hundreds of witnesses from every section of the community, and including an exhaustive examination into the methods of social insurance in various countries. Their report was not dealt with by the House and has not been published, but will doubtless be the basis of future investigation and action.

It is not very likely that any legislature will adopt any scheme in a hurry, and it is greatly to be desired that every step should be thoroughly tested, and that progress should be along sane and safe lines. However, it must be remembered that legislatures are but servants of the people. If the demand is loud enough, and is made by a sufficiently large number of people, no government can ignore it. And that there is a demand cannot be denied, nor that it is insistent and growing in volume and strength. During the last year, several municipalities and rural districts have gone on record as asking for a health insurance measure. Labour has adopted it definitely as a measure to work for. The man on the street, and, especially, the woman in the home, are strongly in favour of it. So that the demand exists, and the satisfaction of this demand is merely a matter of time. At the present meeting of the Legislature, a committee was appointed to study and report on the matter of health insurance, maternity benefits, etc.

There can be no doubt that health insurance will come, whether we, as a profession, like it or not. We must face this fact. The problem before us is, how we may assist in ensuring that it come in the right manner. At the last session of the British Columbia Legislature the matter was brought up by Dr. H. C. Wrinch, member for Skeena, and it has been again mooted by Mr. Rutledge, member for Burnaby, at this session. We have every reason to believe that, before any legislation is passed, the medical profession will have the fullest possible opportunity to present their views, and this makes it all the more important that we should know exactly what we want, and, if we oppose any suggestions, should be able to give good reason for doing so.

If any system of health insurance is adopted, it is going to affect us profoundly, from the most firmly entrenched specialist to the newest practitioner. Therefore, it is most necessary that we should study this question as fully as we can, in advance of legislation; and this for other than selfish reasons, though we must consider our own interest as well, and have every right to do so. But, apart from this, whatever scheme may be adopted, the medical man will be the most important single factor in its operation. Hence, the success and efficiency of any such scheme must vary directly with the type of medical man that is employed, and with the quality of the work he does. So that, from the standpoint of the public, whom it is intended to benefit, the quality of the medical work done is of the very first importance.

It is most important that no half-formed schemes be put into operation. For instance, in both Alberta and Saskatchewan efforts have been made to relieve existing evils in matters of medical practice and health work, in certain areas. In the case of both these provinces it is too early to say how much or how little good has been done—possibly a great deal of good will result. But the pity of it is that in neither of these cases does any attempt seem to have been made to secure the advice and co-operation of the medical profession, before inaugurating experiments of doubtful value.

What should be the attitude of the medical profession towards health insurance? At

* This is the first of a series of articles by Dr. MacDermot on this and similar topics which will appear in due course in the *Journal*.—EDITOR.

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present, I take it, mainly expectant. We are not supporting, even less initiating, any scheme; nor are we opposed to health insurance. We should be willing, and I am sure we are willing, to support and help to implement any wisely designed measure calculated to improve social conditions, to lessen sickness, and to prevent disease. We should be ready, and equipped, to advise the Legislature as to what is sane and wise, and what would be shortsighted and dangerous legislation. To so equip ourselves we need to study the whole problem. We should be not only an enlightened body but a united one. Not merely the province of British Columbia, not merely a few committees and individuals in the province, should have knowledge and understanding, but the medical profession throughout Canada should be kept in touch, and should be co-ordinated and united. The Canadian Medical Association, which has never failed to function as a truly national organization, should, we feel, be constantly in touch with the situation here, and give its advice and support.

We do not want the history of health insurance in England to repeat itself here. There the medical profession was taken by surprise, and suddenly saddled with an ill-considered political scheme, and while it is to their credit that they have loyally done their best to make it a success so far as this could be done, yet they felt that they were unfairly and discourteously treated. Probaby it was to some extent their own fault. We must see to it that such a fault will not be ours.

It would, no doubt, be better if health insurance were a matter of federal legislation, but we are advised that this cannot be done. Health is one of the matters within the control of the provinces and not of the Federal Government; and legislation must be provincial, at the outset at least. Later, unification of various provincial schemes may, and no doubt will, be effected.

As was said above, there is a growing demand on the part of the public for health insurance, at least in the western provinces. This has probably been considerably stimulated by the efficient working of the Workmen's Compensation Act, which takes care of industrial accidents. I shall have frequent cause to refer to this, as a working model of health insurance on a limited scale.

What are the reasons for this demand which comes chiefly from the wage-earners, and the family of moderate means? They may be briefly summarized, I think, as follows:

The art of medicine, the diagnosis and treatment of disease, have almost overnight become revolutionized by the immense accession of methods of diagnosis and treatment which were unknown thirty or forty years ago, when medical practice was based largely on the acquirement of skill by the individual practitioner. Now, no conscientious physician can be satisfied in his diagnosis and treatment of a case without the use of one or more, sometimes many, of these methods. We all agree that the laboratory, the x-ray, the basal metabolimeter, are indispensable, not for the rare or occasional case, but many times a day. And the public knows this, too, and demands it. Such measures are, indeed, an economy in time, and, in the end, of money, in that they ensure accuracy of diagnosis, without which treatment is blind and wasteful, if not actually harmful.

Now, these things cost money, often more money than the actual treatment costs, and the man of moderate means is often crippled by a heavy bill incurred, not for care, but merely for the finding out of what is the matter. All too frequently the fear of expense leads to the omission of tests and examinations which should be made, with the result that treatment is inadequate and unsatisfactory.

Even treatment is far more expensive than it used to be. The working-man, in British Columbia at least, has an average income of about $1,000 a year. Most of this goes to pay rent, board, and clothing, and if he has a family, his margin is not going to be large. If he contracts acute appendicitis, or his child needs a tonsillectomy, the bills he incurs, added to loss of wages when he himself is sick, with hospital and incidental expenses, are well-nigh ruinous. It is greatly to the credit of the wage-earner that he is in many ways the most satisfactory patient we have. He pays his bills, perhaps in instalments, but usually in full. But sickness is a tremendous financial burden under our present system. This is one great reason for the growing demand for health insurance. We must add, too, the increasing prominence of hospital treatment in disease, its great advantages making it almost an essential.

Again, there is a growing realization that sickness is not a private matter, not the concern of the individual alone; that it is a matter affecting the community, often caused, or aggravated, by the conditions of living in a community; that it is related, possibly, to industry, and the conditions of work, having a relation to defective housing, bad local conditions, and other weaknesses of our social organization. Infectious disease is, of course, a community matter, and is recognized as such, to some degree even in the matter of treatment, as in the case of diphtheria. But the family whose children contract scarlet fever or whooping-cough through contact with the children of another family, must pay doctors and hospitals for the treatment of a disease they owe to no fault of their own. Industrial

and occupational disease, too, come under the head of community disease.

The question of sickness is largely an economic one. The vast majority of men earn their living by working in some industry. They are, economically speaking, machines. Machines need occasional repair and constant maintenance. If run improperly they break down. So with the human machine. Conditions of labour, special exposures and dangers incident to a particular industry, impose special strains on the human machine working thereat. Large employers of labour recognize this, and insist on proper medical supervision of their employees. They even employ nurses, and sometimes doctors, at their own expense, to protect the health of their workers.

We recognize the community's responsibility for disease in some ways; prenatal clinics, school medical officers and nurses, open-air schools, and many other community activities show this. Maternity is a concern of the community as a whole, but this point need not be unduly stressed.

Next is the question of *time-loss due to sickness*, one of the most important reasons for some form of health insurance. If a workman is hurt at this occupation, not only is he given medical care but his wages, or a large portion of them, are paid him while he is off. If he falls sick, as a result of exposure or overwork, he receives no such consideration, but it is just as desirable, for his family's sake, that he should. This loss of time and income through illness is a most serious problem to the working man. Frequently, he continues working when he should be in bed, thereby aggravating and prolonging his illness; next, the worry and anxiety of financial want are a serious burden to a sick man, and must affect his recovery; his family suffers want and deprivation, and possibly illness therefrom; and a whole chain of consequences of disastrous effect leads from this one source. Ultimately, this loss must be paid for by someone, and surely it would be wiser to arrange for it. No form of voluntary insurance will meet this contingency. How can a workman earning $1,000 a year pay the premiums necessary to give him $20 or even $15 a week? We know it cannot be done.

Our investigations show us that the average working family in British Columbia has, at any given time, one week's wages between it and actual pennilessness. We find, also, that the average time-loss through illness, for the "worker," is about seven days. The deduction is obvious. If we were all average people, and were sure of only seven days' illness each, the consequences would not be grave; but illness averaged is only of use for statistical purposes, and is only of value if it leads us also to distribute cost.

Lastly, a serious indictment of our present system is that preventive medicine, health measures, are well-nigh non-existent in the very places where they are most needed. It is all very well for us to tell people that they should have periodical examinations, that their children should be vaccinated, and inoculated against diphtheria, that the mother in prospect should have prenatal care, and that the actual mother with her infant should be supervised and guided for some months post partum: that undernourished children should be carefully looked after, that children in bad living conditions, or exposed to tuberculosis need especial care, but all these things cost money, which the working man does not possess and cannot get. Much of this work is done by charitable, some by municipal and provincial, bodies, but it is hit or miss to a great extent, and should be put on a business basis, and be comprehensive.

The Workmen's Compensation Act again, in this matter, gives us a useful example of the value of general compulsory insurance. Before it was inaugurated in British Columbia the incidence of accidents was very great. It was nobody's business to see that safety devices were installed and kept efficient, or that dangerous trades were supervised. Perhaps this is not strictly accurate; there were a few inspectors, but they could not possibly cover the ground. Since the Workmen's Compensation Board took charge, a great change has come o'er the spirit of the scene. The cost to any industry of workmen's compensation is determined by the number and cost of accidents in that industry, and this is a tremendous factor in stimulating each industry to instal safety devices and insist on their use. One of the Commissioners is specially charged with accident prevention, and we are told by Mr. Winn, the Chairman, that conditions have been revolutionized.

It is all very well to blame the general practitioner for not doing more preventive medical work. But it is not really his work, although he does his best. His business is remedial medicine; this is what he is trained for. "Health" work, prevention of disease, can only be done by men trained specially for this work; and they should be employed and paid under "health insurance." It is interesting to note the considerable advance in preventive medicine that has been made in Great Britain as a result of the National Health Insurance Act. This is testified to by investigating bodies in Britain, the United States, and elsewhere, and by the doctors themselves.

From the medical point of view, there would be some advantages to be derived from a system of health insurance. First, all work would be paid for. The medical profession does a vast

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amount of work for little or no financial return. It has long been a tradition of the profession that this work shall be done, and done as well as work that is paid for. To the honour of the profession, it may safely be said that this tradition is loyally and honourably observed. But, in the long run, a physician must make a living, and to do so, his fees from those who do pay, must, to some extent, compensate for his losses in other cases. A study of one large hospital showed a quarter of a million dollars of free work done in one year in that hospital. This is not good business, but under our present system nothing else is possible.

And there is a more serious evil, that would be greatly mitigated by a system of health insurance, comparable to the Workmen's Compensation Act. The doctor, under the latter, can get full service for his patient, laboratory and x-ray tests, and can give any treatment necessary without stint or restriction. But when, as under our system of medical practice, he frequently has to omit these, since the patient cannot possibly afford them, it is hard for him to do his best for the patient.

A study of the conditions in Great Britain shows that on the whole, even with the partial and inadequate system in vogue there, the doctor's position has been greatly improved in both these particulars.

The following extracts, however, show that they feel there is room for improvement in certain directions. In an editorial on the 1928 "Panel Conference" of the British Medical Association, we read as follows:

> "About one-third of the report submitted to it by the Insurance Acts Committee was concerned with the administration of additional treatment benefits and the effect of the recent amending Act of Parliament in relation thereto; yet not one word on this subject was said from the beginning to the end of the Conference. Since, owing to the *obstruction of the approved societies*, the establishment of a consultant, specialist, and pathological service in connection with the insurance scheme has been relegated to a distant future, it is the policy of the Ministry of Health to extend these services as far as possible by the method of additional benefits. The disadvantages of this are obvious; its dangers, especially to the consultant branch of the profession, are great."

From the report of the Private Practice Committee of the British Medical Association (1928),

> Minute 163.—"Resolved: That the Representative Body, viewing with considerable concern the insidious inroads continually being made on private medical practice under the auspices of the State, voluntary bodies and others, and being of opinion that this is not only detrimental to the interests of the individual members of the medical profession but ultimately to all classes in the community, instructs the Council to watch all such developments and actively to interest itself in safeguarding private practice amongst all groups in the medical profession and to develop through the Branches and Divisions closer co-operation with the local medical profession for that purpose."
>
> Minute 166.—"Resolved: That the Representative Body views with anxiety the increasing tendency to transfer the treatment of many diseases and conditions to whole-time medical officers as being detrimental to the public health, and refers to the Council the consideration of the general adoption of the following principles:
>
> 1. The function of the health authority should be confined as much as possible to the prevention of disease.
> 2. The work of the whole-time officer should be confined to administration, inspection, institutional, or consultative work.
> 3. Health visitors and nurses should be definitely responsible to a local practitioner for patients dealt with by them, including expectant mothers."
>
> Minute 220.—"1. That the income limit for membership of a contributory scheme should not exceed the maximum scale as it appears in the Hospital Policy of the Association.
>
> 2. That so far as is possible and consistent with the best interests of the members, arrangements for consultative or specialist services should be made with private practitioners rather than with a voluntary or cottage hospital.
>
> 3. That for this purpose (a) *there should be choice of private practitioner by member and of member by private practitioner; and* (b) *the method and amount of remuneration should be determined by the local medical profession.*"—(Italics ours).

In British Columbia, we have examined into the various systems of health insurance in force, and have reviewed the present position of medical practice, as it is commonly carried on. We have come to the following conclusions, briefly:

(a) The arguments for change and against the continuance of our present system are purely financial. There is no indictment against medicine and its practice, except on the score of cost and the allocation of that cost, and perhaps also on the score that there is not enough medicine practised, both remedial and preventive; while it is accepted that this deficiency is due, again, to prohibitions imposed by cost.

(b) Our present system is the result of many generations of growth. It is a complete one, covering all illness, and providing complete systems of diagnosis and treatment. It is elastic, providing for various grades of practitioner, general, and those specializing in various branches of the art. It affords to patients the widest freedom in the choice of physician, and it pays that physician for the work he does. Competition exists amongst physicians, an excellent thing, ensuring that, to succeed, any given man must prove his fitness and maintain himself in that state of fitness.

(c) Therefore, we feel that change, if it is to come, should be made where it is absolutely necessary, and there only, namely along the line of distribution of cost, and not by any revolutionary or untried system of practice; our present system should not be changed any more than is necessary, and dislocation and experimentation should be avoided.

(d) Any system introduced should fulfil the following requirements:—

1. The service given should be a complete one.

2. Choice of physicians should remain, as now, with the family or patient, provided the physician is properly qualified, and conforms to the rules laid down by the Legislature.

3. Payment for service should be on the basis of work done, according to a schedule on a definite percentage of our present schedule, or one to be arranged with that as a standard.

4. Provision should be made for adequate health and preventive work. This should be completely separated from therapeutic work, and be on a different basis of payment.

5. In an ideal scheme, time loss should be compensated for.

The Workmen's Compensation Act is a proof that this can be done, and done successfully. Here, every one of these requirements is fulfilled. There are one or two other features of this Act which will be dealt with somewhat more fully later.

The operation of this Act has been of immense value as a laboratory experiment, with a view to wider application of the contributory idea. Mr. E. H. Winn, the well-known and most efficient chairman of this Board, has very strong views on this subject. He is entirely convinced that health insurance is necessary; also that it is practicable. His first conclusion is based on a wide and thorough knowledge of social conditions in British Columbia as well as elsewhere. As chairman of the Widows' Pensions Fund, which is administered by the Workmen's Compensation Board, he has had unusual opportunities to see the results of poverty, and the need of medical aid and a proper system of health insurance. He has had twelve years' experience with the Workmen's Compensation Board, and has told us that he is convinced (a) that health insurance is necessary; (b) that it can be successfully put into operation; (c) that such operation should be on the lines of the Workmen's Compensation Act; (d) that in this country the system of capitation payment and appointment of panel doctors would never do; that there should be the freest choice of doctor, that specialists, consultants, laboratory and x-ray work, etc., should all be freely available where necessary, and that payment should be by schedule of fees for work done; (e) that the medical men could be safely left to do their share honestly and satisfactorily. His experience of medical men has, apparently, not discouraged him, and he finds the vast majority workable with and responsive to his appeal for co-operation; (f) he is particularly interested in the preventive side.

Should health insurance be voluntary or compulsory?

This question is frequently raised. At an early stage of our enquiry we gave considerable attention to this point, and the first committee appointed recommended the immediate inauguration of a voluntary scheme. We discarded this, however, almost immediately, for the following reasons:

(a) It is too expensive; figures from insurance companies show that the overhead cost of sickness and accident insurance is about 50 per cent of the premiums. To sell voluntary insurance you must have agents; these must be paid, and their commission is a very heavy charge on the premium.

(b) The very people who need it most are the section of the community that least often has insurance. Figures kept by the Workmen's Compensation Board show that not 5 per cent of those coming under its operation have insurance *of any kind.* This includes life insurance, lodge protection, etc. The truth is that their wages leave so little margin that they do not even consider sickness insurance with its 45 to 50 per cent overhead cost. The cost on the other hand, of operation of the Workmen's Compensation Act is less than 4 per cent per annum.

(c) It would lead to endless friction between ourselves and patients, and among ourselves.

If we are to have health insurance at all, it must be general and compulsory, for all whose income falls below a certain amount to be agreed upon.

What will be the cost of health insurance, and how is this cost to be apportioned?

First, as regards the cost. Our ideas on this have been formed as the result of study of reports from all parts of the world, and particularly from British Columbia statistics, and, further, by a survey of contracts at present existing between medical men and industrial companies employing large numbers of men, married and unmarried. These facts and figures can be obtained at any time, but may best be summarized for the purpose of this article.

The cost of sickness is, roughly, three to three and a half times that of accident, as regards medical and hospital treatment. Under the Workmen's Compensation Act this costs approximately two and a half cents a day, of which the workman contributes one cent daily. Therefore a tax on the workman of about three cents a day would cover his medical and hospital charges, and would give him complete care. The balance would be paid, partly by the State, and partly by the employers of labour. Time loss would be taken care of separately, as a charge on industry. The average family would have to pay three to three and a half dollars a month, and this would provide for all sickness.

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As regards medical fees, these might be arranged as is done under the Workmen's Compensation Board, namely from 60 to 65 per cent of our regular fees. Probably some rearrangement of our schedule would be necessary. There would have to be clearer definition of certain items, and probably any list agreed upon would at first be tentative only and subject to revision later. The question of specialist's fees would need careful consideration; the tendency is always to think that a specialist earns a large fee rather easily. We, who know the facts, know that this is not so, and that an opinion from a competent specialist must necessarily be costly, being based on a very complete examination, and guided by expensively acquired skill and experience.

The cost would be apportioned between the beneficiary, the employer, and the State. Due regard would be paid to the relation of industry to sickness, and to the responsibility of the community, *i.e.*, the State. Various percentages have been suggested, but these are matters to be decided by statistical experts.

A wage-limit would have to be set, below which all workers would be insured compulsorily. Opportunity might be given to those whose earnings exceed this limit to insure voluntarily. This, again, is a matter for decision by those who are responsible for elaboration of details of the Act.

Retrospect

THE MUSCULATURE OF THE BRONCHI AND LUNGS

A RETROSPECT*

BY CHARLES CLIFFORD MACKLIN, M.B.

London.

This review illustrates the importance of a clear appreciation of the anatomy of the bronchial musculature as a prerequisite to an accurate interpretation of its physiological activity. A conception of the airway is first built up, particularly as regards the complicated terminal or "respiratory" part. This is shown to be, as Sir Arthur Keith terms it, a "bellows," capable of expanding and contracting, and this capacity is attained through its remarkable structure. It is a system of branched tubes whose walls are perforated like sieves, the apertures leading into similar branches or into blind multilocular or unilocular compartments whose final subdivisions are known as alveoli. The muscle-system is continuous from the larynx to the alveolar mouths, and in general may be visualized as a replica of the bronchial tree. It is a network of unstriated fibres mixed with elastic tissue, and in the respiratory part of the airway these fibres embrace the apertures in the wall, and form sphincters for the mouths of the air-sacs. This complicated system of airchambers and connecting air-conduits is built to allow for an "ebb and flow" of air. This means that its lining network of myo-elastic tissue must open up in inflation to permit of enlargement of the lumina of the tubes and proper ventilation of the alveoli. Contraction of this network shortens and narrows the tubes and forces out the air. Indeed, this inspiratory lengthening with widening and expiratory shortening with narrowing go on rhythmically in all parts of the lung which are in activity, and in the conducting as well as in the respiratory part. In quiet respiration only a fraction of the lung tissue shows this change. Thus the capacity of the entire airway is a variable quantity, corresponding to the "dead space." There is a discussion of the latter, and an anatomical interpretation of it.

These activities of the muscle call for an adequate nervous control, found in the system of vagus and sympathetic nerves which supply sensory and motor fibres to the muscle and sensory fibres to the mucosa. It is suggested that there may be a reciprocal or "antagonistic" action on the part of the muscle of the bronchi, as contrasted with that of the chest wall and diaphragm, the former relaxing when the latter contracts, and *vice versa*. In this way the bronchial muscle adapts itself to the needs of the phases of respiration. When the tubes are plugged with thick exudate the muscle exhibits a sort of peristalsis, the waves travelling toward the larynx and carrying out the offending mass. This has been demonstrated by x-ray shadows of artificially introduced radio-opaque pastes. The same "escalator" action has been described in the normal free bronchi, and it may be that, in moderate degree, this is a constant phenomenon, acting to expel gases or fluids.

There has been a great deal of experimentation with drugs on the isolated bronchial muscle, and much information has been gained regarding their mode of action. Adrenalin causes a broncho-dilatation, which is regarded as helpful in asphyxia, a condition marked by a liberation of an increased quantity of this substance.

In asthma there is a local spasm of the muscle, and the site of this has been much debated. This point, and the various causes of this condition, are discussed. Anaphylaxis is similarly dealt with in relation to the muscle, together with other pathological conditions, as massive collapse of the lung.

The delicate fibres of muscle found in the interstices of the bronchial tree and spoken of as the "interstitial muscle" are described. Some 492 articles are canvassed in this review, which emphasizes the importance clinically of viewing the lung as a muscular organ.

* From *Physiological Reviews* **9**: 1, Jan. 1929.

Editorial

SOME THOUGHTS ON MEDICAL EDUCATION

THE practice of medicine, once a matter of local and later of national import, has since the War become much more than this. The old question, "Am I my brother's keeper?" is being answered with an emphatic "Yes." For a long time past, in connection at least with the prevention of disease, the liberty of the individual has been interfered with for the benefit of the community. And now we find the League of Nations taking up the problems of disease from an international point of view, with the sole purpose of bringing about an amelioration in the state of mankind generally. Individualism is thus quickly giving place to collectivism. The principle of "the greatest good to the greatest number" is beginning to rule. This being so, it is not out of place to consider our equipment for this great task, in so far as it concerns us as a profession.

Sir Squire Sprigge, the distinguished editor of *The Lancet*, has recently completed a survey of some of the principal medical schools in Canada and the United States. His impressions, which are published in the form of a special educational supplement to his journal under date of January 5th, 1929, are stated with such judicial fairness, and broad sympathy, that the old adage "Comparisons are odious" certainly does not apply in this case. A careful study of his report arouses hope for greater things in the future, for that report seems to indicate how much there is in common in the ideals of the various institutions for medical teaching in the three English-speaking countries, Great Britain, the United States and Canada, notwithstanding the fact that they attempt to attain those ideals by somewhat different paths. In his introductory remarks Sir Squire says:—"The education of medical students on some international pattern would mean a reciprocity which none of us will live to see, and for which civilization is not prepared; but, nevertheless such an event is nearer than would have been thought possible when intercommunication between nations was more limited, and while our conceptions of pathology were less broad. Already the knowledge that British medical men are trained from the start in a form which is comparable to that which prevails in the United States and Canada shows that a practical reciprocity between the medicine of the English-speaking peoples exists, and may be making ready the path for a larger fusion. Hence, the pattern of medical education prevailing on the other side of the Atlantic is important to us all, both for what it is and what it may later imply. Further, fullness of understanding between the English-speaking peoples in all departments of life must make for the happiness of a world that is so permeated with their energies."

The representative of *The Lancet* could not of course fully compass the field, and, was obliged to restrict his investigations to fourteen medical centres, twelve in the United States and two in Canada, which, however, are among the biggest and best of their kind, and may be regarded as truly representative of the highest ideals in medical education. In Canada the institutions visited were McGill and Toronto Universities; and in the United States, Harvard, Yale, Columbia, Cornell, New York, Pennsylvania, Johns Hopkins, Northwestern, Chicago, Illinois, Michigan, and the Jefferson Medical College.

In leading up to a detailed consideration of the various curricula and clinical facilities provided by the institutions named, Sir Squire Sprigge finds common ground in that "All know it to be desirable to educate those who join the ranks of medicine so that the new men shall be able to carry on their work in two main directions—directions which are but two sides of the same road. Those who would join our ranks must be turned out from their medical schools fit to conduct the service of healing for the public good, and they must also have such a con-

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ception of the science and art of medicine that they will be able to appreciate and assimilate the meaning of new developments, and, if opportunity arises, to assist in these developments by personal contributions." He finds a general similarity in the medical courses provided on this side of the water, with each other, and with the statutory pattern in Great Britain, as regulated by the General Medical Council, and notes further the gratifying fact that, in seeking models, neither the United States nor Canada has had any hesitation in looking to Great Britain. In drawing his comparisons certain important facts emerge.

While the medical courses provided in Canada and the United States, to outward appearance at least, vary considerably in length, and do not coincide with those of the schools in Great Britain, yet such differences are less real than we are apt to think. All hinges on the amount of time allotted to the preliminary sciences, the so-called "pre-medical" subjects, and on the arrangement of these subjects. In the final analysis it is found that the duration of the medical course in Canada and the United States is never shorter, and in most cases is longer, than that in Great Britain.

Sir Squire Sprigge also deals at some length with the differences in regard to the system of qualifying examinations as they are conceived of in Britain and in America. First of all, in America, an attempt, perhaps less successful than outwardly appears, is made to control the quality of the students admitted to matriculation. The student is then followed throughout his course and his progress noted. The number of hours he shall spend in the study of the various subjects is prescribed. At various times he is examined as to his progress, chiefly by his own teachers. Except when the candidate goes up after graduation for Provincial or State licence there are no external examiners. In Great Britain the examinations are standardized by a central authority and means are taken to ensure that the standards are lived up to. The students from all the medical schools are assembled at regulated intervals to meet a common test. They are asked merely to display a satisfactory result from their training; how they are trained plays no part in the test.

The arrangement of the course of study is much the same in Great Britain and America. There are three stages: (1) Purely scientific subjects (passed in Canada and the United States at matriculation); (2) pre-medical scientific subjects, as bio-chemistry, anatomy, and physiology; and, (3) pathology, that is the variations from normal standards, as they are related to clinical procedure. The order in which the subjects are presented varies considerably. In Canada and the United States more attempt is made to preserve a logical sequence. Sir Squire Sprigge's comment is that on our side the student is sometimes introduced to studies before he has been sufficiently informed to profit by them. He instances lessons in psychology, given while the student is studying histology. Here, of course, we are on difficult and debatable ground.

One of the most striking differences in the medical teaching situation between East and West is found in the different relationships that exist between the hospitals and the teaching institutions. In England the hospital is not usually looked upon as an adjunct to university education. In general, the hospitals grew up first, and established their own medical schools. The universities were tacked on as a sort of afterthought. In America the opposite position exists. Where the hospital is not an integral part of the university, arrangements have been come to in many cases to ensure that the university professors in the clinical branches are the visiting physicians, surgeons, and specialists of the hospital, and thus a close co-ordination is maintained. In the United States and Canada the medical schools control the teaching in the hospitals, and the medical schools are an integral part of the universities.

In conclusion, Sir Squire Sprigge draws no conclusions. He feels that his survey was on too limited a scale and too quickly conducted to make any estimates useful at the present time. But, his observations have the merit that they point out the similarities and differences that exist in the methods of medical teaching that have grown up in the three countries considered, and should prove useful as a basis for instituting measures of reform where such may seem advisable.

It may safely be assumed that in Great Britain and America the ideal aimed at in planning a medical course is the same, namely, that those who pass through it will be safe and efficient practitioners, and at the same time will have acquired the scientific mind, so that they can appreciate fully the scientific basis of their calling and thus may aid, on occasion, its advancement. The means adopted in the different countries to reach this ideal vary, it is true, but are probably, on the whole well adapted to their particular needs. Any differences are readily accounted for in the light of the course taken by social and medical history on the two continents.

Those on this side of the water who are responsible for current medical curricula will be excused if they think that the schemes they have produced, after much travail, are the best for our needs. At the same time none will claim that they cannot be bettered. The demand for the better training of the medical man has resulted in much more time being given to the basic sciences ancillary to medicine, and also in the requirement of a higher standard of general scholarship. The tendency has been, too, to make the final year a purely practical one, spent in clinical hospital work, as far as possible divorced from formal instruction by means of lectures. But this result was only reached after experimentation over a period of some years. It must be admitted that all are not agreed as to the merits of the existing scheme. Some still think that the increased time demanded for study should have been devoted to "practical," that is clinical subjects; too much attention is paid to chemistry and physics. Surely they forget that in chemistry and physics lies the best training for the acquirement of the scientific habit of mind that all think essential. Not all are going to be practitioners. Some are going to be teachers, and others, research workers. If not, our progress will cease. Much of the so-called "research" is vitiated by the fact that those undertaking it are not qualified to do so because of insufficient grounding in chemistry and physics.

The custom in vogue now in the best Canadian and American medical schools of selecting their entrants, while it does not prevent the discards from entering other colleges, at least acts to some extent as a deterrent in the case of those who are the poorest equipped, and ensures that the output of the first-class colleges is of better quality, thus enhancing the value of the medical degrees of such institutions.

The practice of keeping tab on the medical student throughout his course is undoubtedly paternal, but it ensures the elimination of those unfit for various reasons at an early stage of their careers, which course is much fairer to them. They do not waste time and money on reaching out for the unattainable, and may transfer their energies before it is too late to other callings in which they may succeed.

The arrangement of the subjects in the medical curriculum has always been a matter of great difficulty. We need not worry if the young medical student is asked to study psychology at the same time as histology. Surely a student with two years arts to his credit, and still more if he is a B.A., can cope with it early. What seems to be more important is how soon we should teach bacteriology and pathology, and how soon the student should be introduced to hospital work. The system of leading up to the purely medical subjects through the basic sciences of chemistry, physics, and biology, and the pre-requisites of anatomy, physiology, bio-chemistry, and bacteriology seems rational. The proper sequence of these subjects, however, is not generally agreed upon, and calls for the careful attention of our medical educationalists.

Another point of great importance is the proper allotment of the time given to the major subjects of medicine, surgery, gynæcology, and obstetrics. The impression one gets is that too much time is devoted to surgery. In a recent editorial in this *Journal*[1] it was stated that in most countries surgery was given twice as much time as obstetrics, and in the United States the ratio was four and one-half hours to one. In another editorial[2] the suggestion was made, with some fear and trembling, that less time might with advantage be devoted to surgery and more to gynæcology and obstetrics. The time allotted to surgery might be spent in the inculcation of sound surgical principles, minor surgery, and the conduct of the relatively few operations that constitute

the bulk of ordinary emergencies, such as those for hernia, appendicitis, and intestinal obstruction. More advanced instruction might be safely left to post-graduate days. The surgeons themselves do not admit that the average graduate in medicine is qualified to do surgery when he leaves college, though his diploma frequently implies that he is. The current curricula will stand pruning in spots; where it is earnestly desired to add further instruction in certain directions, it would be better to leave this to the post-graduate period.

There is undoubtedly one danger in the American system, where the periods of instruction and the sequence of studies are rigidly prescribed and enforced, and especially where the recitation system is popular, namely, that the student will come to regard himself as simply a cog in the machine and will stifle any individuality he may have had. After all, the acquisition of a scientific method is of more importance than the accumulation of facts that may speedily be forgotten. Sometimes, we are afraid, the various subjects are dealt with as if they were in water-tight compartments. This danger is even greater in those institutions which teach the different subjects "intensively," for example, where they devote the whole of the day for six or more weeks to, say, histology, and then forget it.

Sir Squire Sprigge has done English, Canadian, and American medicine a real service in giving us the benefit of his penetrating observations and illuminating impressions.

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A.G.N.

IODINE AND NUTRITION

ATTENTION has been called in a recent report of the Medical Research Council* to the very fundamental influence of iodine on nutrition, of which we have been hitherto unaware. Recent investigations would indicate that hardly a living cell remains indifferent to its action, and a deficiency of it appears to affect almost every function and tissue in the body. It is very ubiquitous, for it is present in earth, air and sea, and it appears to stand in very special relation to biological processes in both the vegetable and animal world. Certain living cells in the body appear to possess the power of storing the iodine obtained from their surroundings. The effect of this on plant life appears to be dependent on the amount supplied; on the medium in which it is supplied, and on the species of plants to which it is supplied. There would appear to be an optimum dosage which varies for different species of plants. Its influence on the beet plant is notable and it is found that by supplying iodine in the manure the sugar yield of this plant can be increased by one third.

It is more difficult in the case of animals to estimate the direct action of iodine, as this is to some extent obscured by the indirect action of the thyroid gland. Conflicting results have been obtained from experiments in Scotland and in America. Its importance, however, is well shown by experiments on tadpoles. Metabolism in the amphibian is very dependent upon a normal thyroid excretion.

Recent work on the influence of iodine on certain tissues and organs in a normal animal has given important results. Iodine very definitely affects their nutrition and growth. It stimulates intestinal movements and in increased dosage may induce diarrhœa. In large doses it may affect the sex glands unfavourably, but in moderate dosage no injurious action has been noticed.

The amount required for normal development of animals and man would appear to be very small. Experiments on animals would indicate that the amount varies from 1 to 6 parts per 1,000 million of body weight. In the human subject the minimum amount required daily has been calculated as 15 millionths of a gramme, but children require about three times this amount. The dosage necessary to prevent goitre when threatened is higher still amounting to about 100 micrograms per day.

* Special Report No. 123, prepared by Drs. J. B. Orr and L. Leitch.

The importance of mineral balance in dietetics is becoming increasingly recognized and the part played by the iodine appears to be extremely important. The animal body apparently has certain cells which have, in a very special degree, the power to absorb and collect any iodine in the blood, an interesting example of chemical specialization.

Furthermore, in a recent paper Kendall has brought forward evidence that would indicate that thyroxin is not the only iodine compound in the thyroid, nor yet the most physiologically active. From some samples of dried thyroid possessing marked physiological activity he was unable to isolate any thyroxin.

We appear to be on the brink of further discoveries regarding the influence of iodine in the body, which may increase greatly the significance of this element in the processes of life. A.D.B.

TULARÆMIA

WE, in Canada, have been fortunate in escaping for a time at least some of the ills that affect our neighbours to the south, but how much longer this happy state will continue is problematical. Already, Malta fever (undulant fever), or otherwise Brucella abortus infection, for the two are probably identical, which we have been accustomed to regard an an exotic disease, has gained a foothold here, and another, tularæmia, bids fair to follow its malign example.

Tularæmia was first described by McCoy[1] as an affection of ground squirrels, and is a disease characterized by its general resemblance to bubonic plague of rodents. Its specific cause is a small round, or rod-shaped, micro-organism, enclosed in a delicate capsule, which was discovered in the next year (1912) by McCoy and Chapin.[2] This germ is now known by the name of *Bacterium tularense*, from Tulare county in California where the disease was first discovered.

Tularæmia seems to be primarily a disease of rodents, notably the California and Utah ground squirrels and various species of rabbits, though domestic rabbits have not so far been found to be attacked. Rats are relatively immune, but the disease is easily transmitted to mice, guinea-pigs, gophers, and Belgian hares. Small monkeys can be infected. Swine, calves, and goats are rather resistant; cats, dogs, and pigeons are immune. Susceptible animals infected die of generalised septicæmia. In spite of a superficial resemblance to bubonic plague the diseases are not the same, as the lesions produced in the two cases are not identical, and guinea-pigs rendered immune to *B. pestis* are susceptible to *Bact. tularense*.

Cases in man were first reported by Wherry and Lamb[3] in 1914, in two patients suffering from ulcerative conjunctivitis and lymphadenitis, the specific cause being isolated and grown on special media. Infection in these particular instances appeared to be due to handling infected rabbits. Later, Francis[4] showed that "deer-fly disease" was due to the same microbic agent. In this affection the onset is sudden, following the bite of a fly, with pain, fever, prostration, and the regional lymph-nodes corresponding to the bitten part are swollen, tender, and may suppurate. The affection lasts from three to six weeks, and is followed by a tardy convalescence. Occasionally, death has resulted. The disease can be diagnosed either by isolating the specific organisms from the blood or local lesions, or by agglutination and complement-fixation tests. Rather curiously, however, in about twenty per cent of cases cross-agglutination with *Br. abortus* and *Br. Melitensis* has been found.

The specific cause is transmitted usually through the agency of biting insects, of which a number are incriminated, including various kinds of ticks, lice, mites, and bed-bugs. The chief are *Chrysops discalis*, *Stomoxys calcitrans*, *Ceratophylus acutus*, *Cimex lectularius*, *Polyplax serratus*, and *Hæmodipsus ventricosus*, the first four of which bite human beings as well as rodents. Apparently, also, infection can take place through the alimentary canal, for guinea-pigs, which do not develop the disease after insect bites, will do so if fed with the fæces of infected bed-bugs.

It is now known that tularæmia is widely disseminated throughout the length and

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breadth of the United States, and human cases have been found in every State bordering on Canada, with the exception of Washington, Vermont, and Maine. Recently, too, Parker and Francis[5] have discovered the disease in the sheep of Montana, a very disquieting announcement. In this case the tick, *Dermacentor andersoni* Stiles, which is known to be sometimes the host of *Bact. tularense*, is supposed to be at fault. Under these circumstances it is altogether likely that tularæmia will before long make its appearance in Canada, and public health officials and veterinarians should be on the lookout for it.

The question also arises whether infected sheep will prove to be a menace to man. The fact that sheep are being attacked means that a greater number of human beings are being subjected to the possibility of infection. It is certainly possible that the hands of those handling sheep may be contaminated by the crushed infected ticks and their fæces, which are caught in the wool, often in large amounts. It is possible, also, that there may be contamination from the necrotic foci which sometimes form where the ticks have been attached. The chance of infected meat being a source of danger to those working in abattoirs and packing-houses, while more remote, cannot altogether be dismissed as visionary.

Constant vigilance must be exercised from henceforth on our side of the line, for while the situation in regard to sheep can be handled effectively, as occasion may arise, yet, no doubt, there is at present unrestricted reciprocity between Canada and the United States in regard to the small rodents, which are probably the chief source of the trouble.

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A.G.N.

THE HARBEN LECTURES ON ASTHMA

IN his recent Harben lectures* Dr. A. T. Henderson presents us with a concise and adequate statement of modern theories regarding asthma and such related diseases as hayfever, urticaria, and eczema. He shows how much we owe to research in biology and immunology for the development of these views. It is not so long ago that asthma was looked upon chiefly as a neurosis, presenting as it did a medley of apparently irreconcilable and unrelated phenomena. Within the last few years, however, we have come to regard these phenomena as being largely explicable on the common basis of a special sensitiveness of individuals to given substances. These in a large proportion of cases are protein in nature, but it is well known that substances of simpler chemical constitution may also be responsible; for example, quinine, aspirin, and potassium iodide.

We now regard certain types of asthma, therefore, as the manifestation in the respiratory passages of a reaction to one or more substances to which the individual is specially sensitive, and this has opened the way to successful methods of diagnosis and treatment. But Dr. Henderson wisely points out that it is a mistake to expect too much from these methods or from the theories on which they are based, for there are still large gaps in the immunological knowledge from which they were derived. We do not yet fully understand the mechanism underlying the cutaneous reactions, for example, and there are many other problems to which immunology is not yet ready to give an answer. In the meantime, it is probably better to deal with asthma as a physician first and as an immunologist afterwards. It is valuable to have the fresh light which has been shed on these still unsolved problems, but nothing has yet been found which can supplant the necessity for careful history-taking and general physical examination.

This, we gather, is Dr. Henderson's viewpoint. While his lectures are largely devoted to pointing out the valuable guidance which may be had from the applications of the sensi-

* The Harben Lectures, 1928, *The Jour. of State Med.* **36:** Dec. 1928, and **37:** Jan. to March 1929.

tization theory, he is duly cautious in admitting that "the protein factor may be but one of the links in the causative chain." If in enthusiasm for the new theories there has been a tendency to lose sight of the other links, it is well that their existence should be recalled by those who see them steadily and see them whole. H.E.M.

THE CONTROL OF LEPROSY

LEPROSY, that ancient and dread disease, bids fair at last to be added to the list of affections over which man can claim some sort of effective control. Known almost from time immemorial, it became prevalent in England and other parts of Europe as an aftermath of the Crusades, which naturally led to an increased amount of intercourse between West and East. In consequence, lazarettos, literally in hundreds, sprang up all over. The situation was probably not so bad as it seemed, for there is little doubt that syphilis, tuberculosis, psoriasis, and other affections of the skin, were included under the general term "leprosy," a condition of things that is not surprising under the circumstances. Still, it was bad enough, and the Biblical account of the disease, together with the elaborate and somewhat theatrical precautions adopted in mediæval times to control its spread, combined to make the very name of leprosy a fearsome thing. Yet, as we now know, the danger of infection in the case of leprosy is actually not great. As a matter of fact it is a far less dangerous disease than tuberculosis. In northern Europe and the temperate zone of America leprosy has declined in prevalence almost to the vanishing point, not from any increased efficacy in therapeutics, but, practically, altogether as a result of segregation. In parts of Australia the disease is about stationary, though in Queensland it seems to be gaining ground. In Africa, Asia, the East and West Indies, on the other hand, leprosy has proved to be well-nigh unmanageable. The reason for this is that the dread of isolation, which in the past has meant, practically, imprisonment for life, has prevented the sufferers from reporting themselves during the incipient stage of the disease, when there would have been a better chance of cure. According to Sir Leonard Rogers, F.R.S., the Honorary Medical Secretary of The British Empire Leprosy Relief Association, the new plan of campaign, as it is applied, at least, in tropical Africa, is to permit early, and for the most part they are non-infective, cases to attend dispensaries and hospitals for treatment. This does away with the incentive to concealment. There appears to be little risk in so doing, for it seems that rather close contact with a leper, such as sleeping in the same bed or living in the same house for a long time, is requisite to bring about the transmission of the disease. About eighty per cent of the infections are acquired in this way.

In the matter of treatment, the agent of choice, which has been used for a long time past, is chaulmoogra oil. This is an oil obtained from the seeds of a plant growing in South Asia—the *gynocardia odorata*. It has the disadvantage of being highly nauseating, and, while it is somewhat more effective when given by injection this method is quite painful. At best it hardly does more than retard the course of the disease.

A great advance has come about through the employment of derivatives of a closely allied substance, known as hydnocarpus oil. Sir Leonard Rogers, on the basis of experiments carried out in Calcutta, has discovered that the injection of soluble sodium salts or soaps of the fatty acids of hydnocarpus oil is highly effective. It is stated that nearly all early cases, and many of the advanced ones, are curable in this way. One of the best of several similar preparations is sodium hydnocarpate.

This new therapeutic agent has, in addition, the great merit of cheapness. The most active preparation now made from the oil can be produced in powder form at a cost of two shillings for a full year's treatment. This is of much importance in view of the enormous number of cases to be handled. The drugs in question are now being sent out in quantity from England, and the seed of two varieties of hydnocarpus is now being distributed. Already thousands of the plants have been raised in Africa, the West Indies and Fiji. A.G.N.

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Editorial Comments

THE DEATH OF SIR ALEXANDER OGSTON

Sir Alexander Ogston, K.C.V.O., M.D., C.M., LL.D., Extra Surgeon to the King in Scotland and Emeritus Professor of Surgery in the University of Aberdeen, died at his home on February 1st last, at the age of eighty-four years.

His death, which is much regretted, removes a notable figure from the ranks of the profession, one who did much for the science of medicine and for the advance of his own particular branch. Inasmuch as for nearly twenty years Sir Alexander had been retired from the active duties of the Chair of Surgery at Aberdeen he has been little more than a name to the present generation of medical students, but those who studied their bacteriology in the early nineties of the last century, then a subject just in its infancy, will remember Ogston as the discoverer of *staphylococcus aureus* (1882) as a cause of abscess-formation, and will associate his name with other pioneers of the time—Pasteur, Lister, Billroth (to whom we owe the name streptococcus, or "chain coccus"), Fehleisen (who connected the *streptococcus pyogenes* with erysipelas), (1887), Rosenbach, and Weichselbaum.

Alexander Ogston was born in April, 1844, the eldest son of Francis Ogston, Professor of Medical Jurisprudence in the University of Aberdeen. He took his M.B., C.M. at Aberdeen, with honours, in 1865, and one year after received his doctorate. Later, he studied abroad, at Prague, Vienna, Berlin, and Paris. Starting in his native place as a general practitioner he soon developed a special reputation for his skill in surgery, until his work eventually became purely consulting. On the retirement of Professor William Pirrie in 1882 Ogston became Regius Professor of Surgery at Aberdeen, a post which he held with great distinction for twenty-seven years. Educated before the days of antisepsis, Ogston had the scientific and progressive turn of mind which led him to accept the lead of the new study of bacteriology, so that he was an early convert to the Listerian doctrine. His own studies on the question of suppuration led to his discovery of one of its microbic causes and it is to him that we owe the specific name, *staphylococcus aureus*, because of its resemblance, as it seemed to him, to a bunch of grapes.

Early in his career he devoted himself to bone-surgery, and devised the operation for genu valgum, known as Ogston's operation. But, his greater interest seemed to lie in the subject of military surgery, and he gained much experience in this branch in the Egyptian war of 1884 and 1885, in South Africa in 1899, and in the Great War in 1914 and successive years.

During his life-time Ogston received many and varied honours. He was President of the British Medical Association at the Carlisle meeting in 1896. He was Surgeon-in-Ordinary in succession to Queen Victoria, King Edward VII, and King George V. He was an LL.D. of the Universities of Glasgow and Aberdeen. He was a member of the Deutsche Gesellschaft für Chirurgie, and a corresponding member of La Société Royale des Sciences Médicales et Naturelles de Bruxelles. In 1912 he was made a Knight Commander of the Royal Victorian Order.

Sir Alexander Ogston contributed much to medical literature. The most noteworthy of his papers are: "The operative treatment of genu valgum," (*Edin. Med. J.* 1876-77); "The growth and maintenance of the articular ends of adult bones," (*J. Anat. & Physiol.* 1878); "Report upon micro-organisms in surgical diseases," (*Brit. M. J.* 1881); "Micrococcus poisoning," (*J. Anat. & Physiol.* 1882); "Continental criticism of English rifle bullets," (*Brit. M. J.* 1899); and "A new principle for curing club-foot," (*Brit. M. J.* 1902).

Sir Alexander Ogston was noted for his painstaking care in the examination of his patients, his manual dexterity, and his attention to detail. As a teacher he was thorough, clear, and graphic, and his course on systematic surgery was far in advance of the current text-books of the day. A great man has passed.

A.G.N.

THE LATE PROFESSOR UNNA

The name of Paul Gersen Unna, who has recently died in his seventy-ninth year, is known the world over as one who has done more than anyone else for the cause of scientific dermatology.

Unna was born on September 8, 1850, in the city of Hamburg. He began the study of medicine at Heidelberg, but his studies were quickly interrupted by the outbreak of the Franco-Prussian war, in which he served, receiving a dangerous wound in the leg. After the close of hostilities he resumed his medical course at Heidelberg, Leipzig, and Strasbourg, obtaining his doctorate at the last-mentioned university in 1875. He started the practice of medicine with his father in his native place, and practically the whole of his professional life was spent there.

Unna's special interest lay in the subjects of the biochemistry and histochemistry of the

skin. His inaugural dissertation for his degree was concerned with the development of the skin, based on its staining reactions, and its revolutionary conclusions led to the violent opposition of von Recklinghausen and nearly prevented him from receiving his degree. His early studies on leprosy were also largely histological.

In 1890 Unna first described plasma cells, which were not accepted as an entity by many of his contemporaries, notably Neisser, but are now recognized as possessing quite distinctive characteristics.

A few years later Unna wrote much on the subject of eczema, in which disease he thought that he had discovered the cause in an organism which he called the *morococcus*. His findings were not substantiated and he eventually gave up the claim.

Unna did much also for the cause of therapeutics in connection with diseases of the skin. He introduced, for example, the use of ichthyol.

Unna travelled much in other countries, extending his peregrinations as far as the United States. In consequence, he seems to have become better known and better appreciated abroad than at home.

His literary output was enormous, more than six hundred publications on various phases of his special subject coming from his pen. He was the founder of the *Dermatologische Wochenschrift*, and in this journal most of his publications appeared. He brought out, together with the late Sir Malcolm Morris and others, The International Atlas of Rare Diseases. Then he produced the celebrated Atlas of the Pathological Histology of the Skin, in nine volumes.

Granted in 1907 the title of Professor, it was not until twelve years later that Unna, in his sixty-ninth year, became a professor in an actual university, for it was not until that date that the proposed University of Hamburg became a fact.

A man of keen intellect, a great worker, and absorbed in his work, Unna kept up his activities with unabated zeal to the last. He truly died in harness. A.G.N.

THE MEYERS MEMORIAL

Special attention is called to the announcement that appears on page 426 of the *Journal* in regard to the Meyers Memorial. In these days of stress, both physical and mental, the subject of the functional neuroses in their bearing upon insanity is gaining in importance, and well merits the attention of those specialists who are competent to deal with it. It is earnestly hoped that the far-sighted provision of the late Dr. Campbell Meyers will call forth the presentation of more than one paper on the matter at the coming meeting of the Canadian Medical Association. Such contributions would be of great interest and value to the general practitioner above all, as he is, naturally, the first person who is likely to meet with the conditions referred to, and on him falls the chief responsibility. A.G.N.

THE RADIOACTIVE CONTENT OF MINERAL WATERS

The Editor recently received from one of our members an enquiry regarding the bona fides of a company offering for sale not only their product, a radio-active mineral water, but their capital stock. The correspondent stated that he understood this particular mineral water had been analyzed at the McGill Laboratory. Enquiry from Professor A. S. Eve, the head of the Physics Department, elicited the following comment, with permission to publish:

"From time to time specimens of mineral waters are sent to various centres of research, such as the Bureau of Standards, Washington, or to the laboratories of universities, with a view to the determination of the radioactive content, either of radium in solution, or of radium emanation (radon) adsorbed as a gas. The amount of radioactive material in such waters is generally small, and, on the other hand, almost all waters contain some radioactive material. The units in which these contents are expressed are generally understood only by a few specially trained men, so that the public and even the medical profession, are rather mystified by the situation. Again the amount of dose of radium, or of radium emanation, which may perhaps be beneficial to a patient is entirely unknown to the physicist, and an embarrassing situation has arisen, which sometimes leads to imposture.

In some cases radioactive mineral waters have been specially advertised for consumption when it would be necessary to drink perhaps a barrel or two a day in order to obtain a medicinal dose. In order to gain more clear information on this undesirable situation, is it not advisable that the Canadian Medical Association should appoint a small joint committee of medical men and physicists, who would issue a clear report which might be circulated to all interested?"

SUBSCRIPTION TO THE BRITISH MEDICAL ASSOCIATION JOURNAL

In accordance with the affiliation agreement entered into between the British Medical Association and the Canadian Medical Association several years ago, we are glad to remind members of the Canadian Medical Association that the *British Medical Association Journal* is available to them at half-price, namely, £1. 11. 6. Subscriptions should be sent direct to the Financial Secretary of the British Medical Association, Tavistock Square, London, W.C.1, England. A.T.B.

XUM

Clinical and Laboratory Notes

A NEW TYPE OF BREAST PUMP

BY GEO. H. W. LUCAS, M.A., PH.D.,

Department of Pharmacology,
University of Toronto,

Toronto

The various breast pumps operated by hand, which are marketed at the present time, are very tiring and time-consuming in their manipulation, and, as very few homes are able to afford an electric pump, a new hand pump has been designed to work more efficiently; it is also much easier to clean and sterilize. On the suggestion of Dr. J. A. Kinnear, who saw it in operation in a private home, it was demonstrated at a meeting of the Academy of Medicine, Toronto, December 1, 1927. The glass receptacle has been used on the electric pump in the Toronto General Hospital, and a dozen or more complete pumps have been operated in private homes in Toronto and have proved very satisfactory.

In discussing the English pump (Fig. 1) it is advisable to regard it from the point of view of the mother who has to operate it on herself, and from that of the nurse or attendant who operates it for the patient and looks after the cleaning and sterilization.

The mother finds that the pump must be held in a horizontal position, in order that the milk be caught in the small collecting bulb. As the rigidly fastened rubber bulb which supplies the suction is then about six or eight inches out from the breast, the hand and forearm must be held out from the body more or less horizontally, at right angles to the pump, in order to squeeze the bulb. The palm of the hand is towards the breast, a position which tends to fatigue the arm very quickly. Moreover, the manner in which the bulb is fastened to the glass portion is such that it cannot be grasped with the whole hand to squeeze it; the squeezing operation is performed by compressing the bulb between the ends of the fingers and the ball of the thumb, a procedure which soon fatigues the muscles of the wrist and forearm. As the collecting bulb is small, the pump has to be emptied frequently. The bell-mouth of the pump thus becomes wet and makes the breast surrounding the nipple slippery. In this condition it is very difficult to keep the pump in position while squeezing the bulb, because the bell-mouth is very flat. After a patient has pumped for half an hour or more, the whole arm involved in manipulating the bulb becomes very tired. The patient as a rule has tried various positions of body and arms in order to get relief and to continue to pump, the result of which is a "tired all over" feeling and as is well known such conditions of fatigue do not tend to a generous supply of milk.

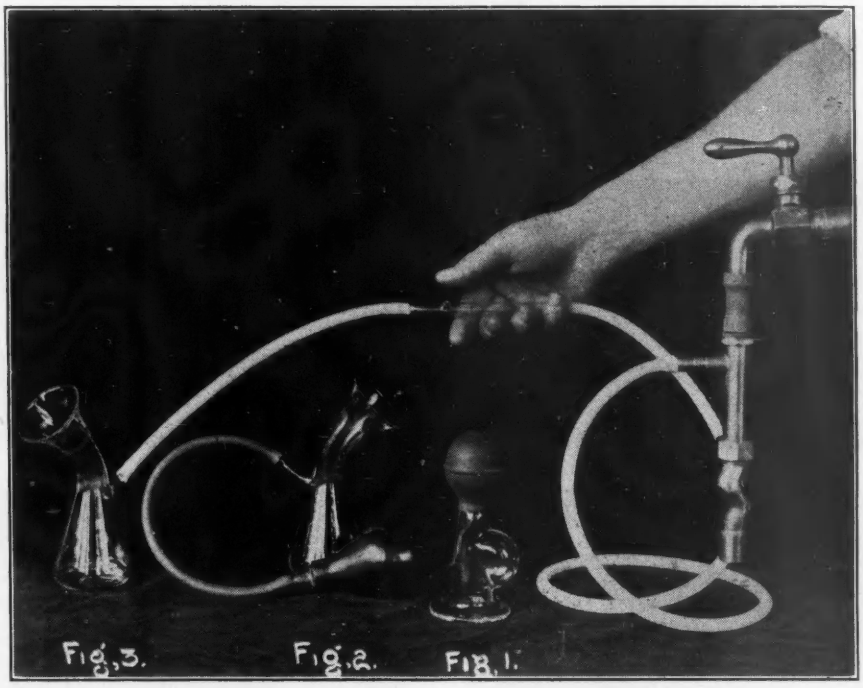
For the nurse or attendant the pumping process is even more fatiguing. The operator must sit either in front of the patient and squeeze the bulb with the fingers, or sit beside the patient, reach over, and squeeze the bulb, holding the arm in the same position as the patient must assume when operating the pump herself. This procedure becomes very tiresome. Finally, because of the manner in which the bulb is rigidly connected to the glass portion, unless great care is taken, milk gets into the rubber bulb and is not easily removed. When one wishes to sterilize the pump it cannot be totally immersed in boiling water very frequently without rendering the rubber bulb useless.

The type of hand pump designed to replace the English pump is shown in Fig. 2. The funnel-shaped bell-mouth is fastened to a collecting vessel of three to four ounces capacity. Near the junction of the bell-mouth and the collecting vessel a piece of glass tubing is sealed in, to provide an opening through which the air is exhausted in the pumping. The whole is made of pyrex or vitrex glass, which is very strong and resistant to heat. The shape of the pump is such that when held vertically the bell-mouth fits naturally over the breast and nipple. Due to the shape of the bell-mouth, once the pump is in operation there is very little leaking, and since the pump is not frequently emptied (its contents being about four ounces) the breast does not become wet; consequently the pump is more easily held in position. The glass portion of the pump is connected to a rubber bulb by means of a piece of rubber tubing of such length (about a foot) that the hand squeezing the bulb rests on the lap and thus relieves the strain on the arm and shoulder. As the bulb thus connected can be grasped with the whole hand and is not rigidly attached to the glass portion, its manipulation is rendered much easier for a nurse or attendant. When the collecting bulb is full, it may be emptied through the bell-mouth or the glass portion may be detached from the rubber tubing and the contents poured out through the opening thus provided. The shape of the glass portion is such that it may be cleaned with a brush, soap, and water when it is necessary. As it is made of pyrex or vitrex glass it may be sterilized any number of times without fear of its cracking due to the heat. There are no rubber connections of any kind connected with the glass portion which need sterilization, so that the

whole may be boiled in water. If one wishes, the rubber tubing connecting the bulb and glass portion may be disconnected, washed, and sterilized without any damage to it.

In a city or town where a water tap is available much of the labour may be saved by use of a filter-pump connected to the glass portion (Fig. 3). Connection is made by a long piece of rubber tubing, in which is inserted a piece of glass tube having in it a small hole or leak. This glass tube is inserted in the rubber tubing about a foot or so from the glass portion, so that the hand grasping it may rest on the lap.

The filter-pump furnishes the suction and is easily connected to a tap by means of a short piece of hose or stout rubber tube, or it may be screwed in if the thread is of the correct size. The Richards type of filter-pump seems the most efficient. To operate the breast pump the water is turned on, the hole in the glass tube is covered with the thumb, and the bell-mouth adjusted to the breast. The filter pump sucks the air out of the collecting bulb, etc., and the nipple is drawn into the bell-mouth, just as when the squeezed bulb is released during the operation of the hand pump. The milk begins to flow and the thumb is kept over the hole until the suction becomes too severe or the milk ceases to flow. The thumb is then removed from the hole and the filter-pump sucks air in through this hole thus allowing the nipple to retract in the bell-mouth. When the hole is closed the nipple is again drawn into the bell-mouth and the flow of milk begins. Thus, by opening and closing the hole in the glass tube, an intermittent milking operation is carried on. A pump of this type has been in use in a home for three months and has been as efficient in the opinion of the patient as the electric pump which was employed in the hospital.



In conclusion, it may be stated that in its manipulation, ease of cleaning and sterilization, the hand pump designed is superior to the English pump. When the glass portion is used in conjunction with a water filter-pump the pumping operation is made very easy. The glass portion of this design may be used with the electric pump. The cost of either of these pumps is not prohibitive for the average home, and when its efficiency and comfort for the patient are compared with that of other less expensive pumps it is cheaper in the long run. In towns or cities where running water is available, a physician who has considerable obstetrical practice might consider the purchasing of a water pump and renting it to his patients for a small fee which would soon cover its cost. This small apparatus will do practically the same work as an electric pump whose cost is prohibitive for either physician or patient.

Both types of pumps are manufactured by O. H. Johns Glass Co., 219 Broadview Ave., Toronto.

XUM

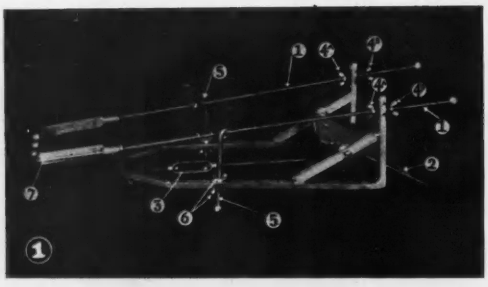
AN IMPROVED SPLINT FOR FRACTURES OF THE TIBIA AND FIBULA

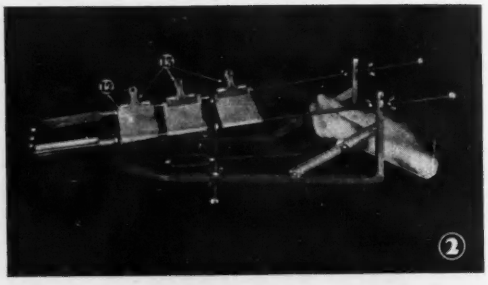
BY JAMES ROBERT ATKINSON, M.D.

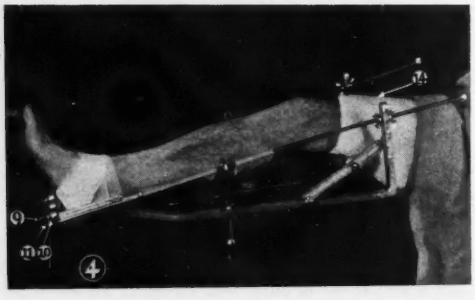
Vancouver

My experience, and the experience of others, in the handling of fractures of the tibia and fibula, has shown me the great difficulty, and in some cases the impossibility, of getting proper extension of the tibia and fibula and of holding them when correction is made. This led to the development of the splint illustrated and described herewith. After using it on every case of fracture of the lower limb which has come under my care during the past few years, and observing it in use by other surgeons, I am able to state that results have been good.

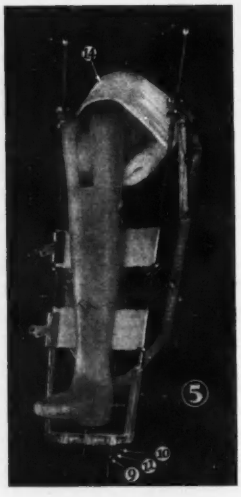
The splint is for a fractured lower limb, and is designed to provide such support for the limb that the fractured ends may be drawn apart and readily adjusted, during which adjustment free access is afforded to the location of the fracture. When both bones of the lower leg are fractured, the broken ends will, under the tension of the muscles, tend to overlap one another, and difficulty is experienced in applying the required tension to bring the fractured ends into their correct relative position, or, when support is afforded from the crotch, without an exceedingly uncomfortable and painful pressure







1. Side rods.
2. Inclined plane.
3. Turnbuckle.
4A. Wing nuts on side rods.
4B. Wing nuts on side rods.
5. Upright posts(looped and threaded).
6. Wing nuts on 5.
7. Stirrup.
8. Pin through os calcis (heel bone).
9. Side bars (on pin 8 and through holes in 7).
10. Pin through side bars 9.
11. Cotter pins (in each end of pin 10).
12. Slings (cotton, made of bandage).
13. Clips (metal paper clips or safety pins to hold slings).
14. Bandage (to hold thigh in place on inclined plane).



INSTRUCTIONS FOR USE OF THE ATKINSON SPLINT IN FRACTURES OF THE TIBIA AND FIBULA

1st. Pad inclined plane. Loosen *all* wing nuts 4A., 4B. and 6.
2nd. Adjust slings 12, to side rods 1. (See Figure 2).
3rd. Drive pin 8 through os calcis (see Figure 3) or use adhesive strapping when practicable.
4th. Lift limb gently into position on splint. (See Figure 4).
5th. Fix foot into stirrup 7 by using side bars 9, pin 10 and cotter pins 11. (See Figure 5) unless adhesive strapping or other means is indicated.
6th. Bind thigh to *well* padded inclined plane 2.
7th. Adjust wing nuts 4A. to get proper extension, and turnbuckle 3 and wing nuts 6 to get proper alignment. When bones are properly set in their natural position lock wing nuts 4B. and wing nuts 6.

applied on this part, which is not adapted to receive it.

In this splint the required resistance for the tension applied to draw the fractured ends of a broken leg to their proper position in relation to one another is imposed on the under side or back of the thigh, adjacent the knee joint, the axis of the thigh being suitably angled to that of the leg.

The figures (page 416) will help to make plain the necessary mechanical details.

The splint frame by which the tension is imposed on the leg and the resistance of that tension distributed, is designed to afford free access to the leg at the location of the fracture for a general inspection or x-ray examination, for manipulation, or for attending to open wounds on any part of the leg or foot. The uprights (5) may be adjusted to impose the required torsion on the limb to bring the fractured ends together. It will be noted that the angle at which the leg is held in relation to that of the thigh may be adjusted by the turnbuckle (3) which alters the angle of the inclined plane (2); this will also alter the anterior or posterior alignment of the bones.

Such parts of the splint as are directly connected to the limb are adjustable, that it may be adaptable to variations in the size of the limb to which it has to be applied.

The splint is not only convenient for the operator, as it offers ample facilities for inspection and manipulation of the fractured limb, but it is also comfortable for the patient. As the splint firmly attaches the injured leg to the thigh and to no other part, the patient has freedom of movement and can assume the position which is most comfortable. It permits the patient to use a wheel-chair, and to assume a sitting posture in bed if desired.

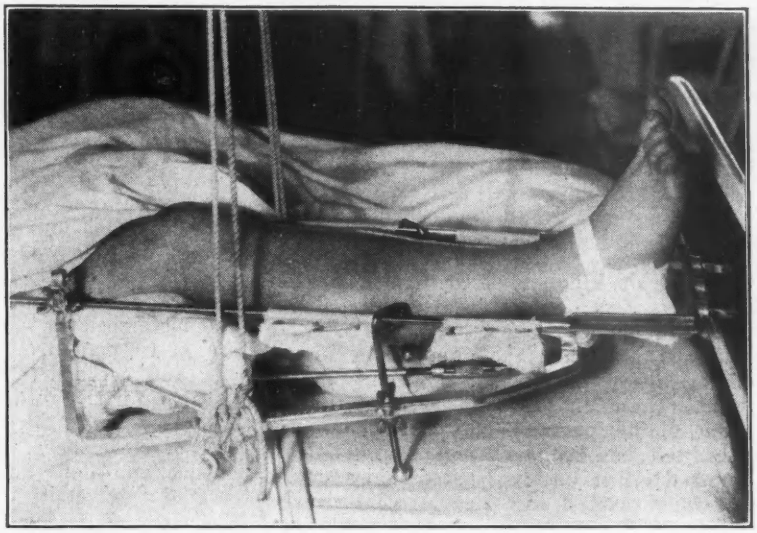


FIG. 6.—Note: The thigh and ankle bandages or strapping are quite loose.

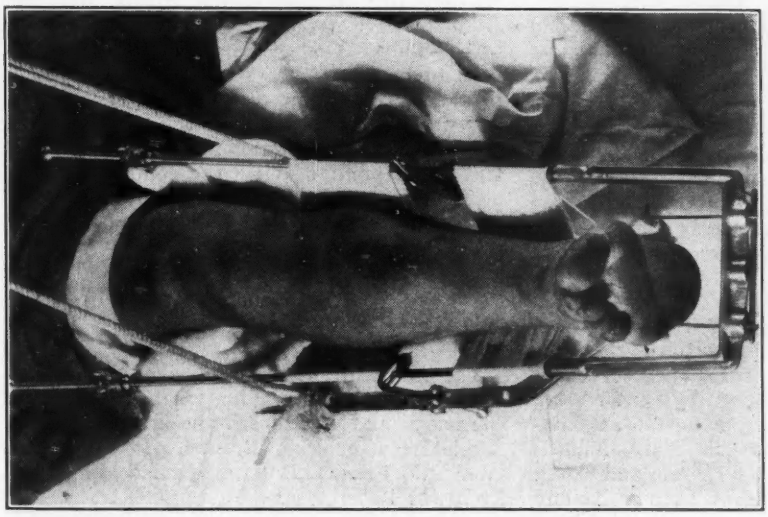


FIG. 7.—There is plenty of room on all sides of the leg and foot for inspection and manipulation, or for attending any open wound.

As a first-aid splint it is convenient and safe, as anyone in a factory or camp can apply it temporarily (over boot and clothing) to a fellow worker, to prevent further injury while the patient is being moved to a hospital, thus eliminating serious complications which often arise after an accident. The limb cannot slip or get out of place. Freedom of motion is allowed the rest of the body, and the limb can be placed under the fluoroscope and the fractured ends seen as they are being pulled into their correct position. After setting, the splint is locked, and the fractured leg may be comfortably supported

from the bed on a Balkan frame or other swing. Roentgenographs can be made as often as required while the limb is in the splint. Physiotherapy, careful massage, and stimulation with a Faradic current or lamp can be employed.

The frame is made of burnished aluminum, and the complete splint weighs about 5½ lbs. It has ample strength and is simple and positive in operation.

The advantages claimed are:

Prevention of shortening and deformity; knee and ankle-joint stiffness is less likely to occur; the danger of resultant atrophy of the leg muscles is less; the time required for recovery is materially shortened; comfort for the patient; convenience and assurance for the operator.

Men and Books

LORENZ HEISTER: SURGEON (1683-1758)

BY JOHN STEWART, C.B.E., M.B., LL.D.,

Halifax, N.S.

Through the kindness of Dr. Slauenwhite, of Rose Bay, Nova Scotia, who presented the volume to our General Secretary, Dr. S. L. Walker, I have had the opportunity of examining a copy of Heister's Surgery in the original German. This is a stout quarto volume of 900 pages, bound in leather. Apparently it has been rebound, as no title is impressed either on the back or sides. It is beautifully printed and there are interleaved sheets or charts with copper plate engravings of surgical instruments and their application. These are very instructive and far more artistic than many of the photo-process prints in some modern books. The title page has been lost, unfortunately, so that we cannot say what the date of this edition may be. Dr. Billings tells us he has never seen a copy of the first edition, that of 1718. The copy in the Washington Library is of 1719. One of the charts of illustrations is also missing. With this exception every page is present, a testimony to the good work of the German book-binder of two centuries ago.

Lorenz Heister was born at Frankfort-on-the-Main in 1683, and died at Helmstadt, near Würzburg, in 1758. He studied medicine at Giessen and other German universities for four years, and then went to Amsterdam where he continued his studies in anatomy and surgery. About this time the universities of Holland had attained a high position. The illustrious Boerhaave at Leyden was the recognized leader in medical teaching and students flocked to him from all over Europe. Heister took his degree at Leyden in 1708. He then served as an army surgeon in Flanders. It is interesting to think that he may have made the acquaintance of English surgeons in Marlborough's army. At any rate he visited Britain and would seem to have made friends there. Among other young surgeons of his own age who were then studying in London was William Cheselden, who within a few years was the leading surgeon in England. In 1710, at 27 years of age, Heister was appointed Professor of Anatomy and Surgery at the University of Altdorf. This university does not now exist, but in its time was famous. It began as an academy about the middle of the sixteenth century at Nuremberg, where Albert Dürer and his associates were inaugurating a golden era in German art. Nuremberg is a walled city and perhaps there was no room for expansion, for the academy was soon removed to Altdorf, a small town of Bavaria a few miles east of Nuremberg. Here it increased in influence and importance and in 1578 it was created a university by a charter of Rudolf II. The glory of Altdorf was in its department of philosophy, which in the opinion of Sir William Hamilton, of Edinburgh, was of exceptional brilliance. But a period of declension set in, and in 1807 this university was merged in that of Erlangen. Here, then, Heister began his life work. He planned his text-book of surgery and lectured to his students in Latin. At this time Latin was the common language of science, and all educated men read and spoke Latin. But Heister soon found that his students were not educated men. The effects of the Thirty Years' War although peace had been signed fifty years ago, were still to be seen and felt. This devastating war had reduced the German States to the last extremity of poverty and desolation. From an economic and social point of view the condition of the people was deplorable. As an eminent historian said, "It was a poverty-stricken land from which art and science seemed to have fled forever." It was no wonder if students and young surgeons were ignorant and unlearned. Heister resolved to write his text-book in the mother tongue.

The first edition was published in Nuremberg in 1718. No similar treatise existed in Germany and the work became the chief surgical text-book in Europe. It was translated into French, Italian, Spanish and Latin. From the Latin version an English translation was made in 1743. It was profusely illustrated, and, although now two hundred years old, is still, as Dr. John Billings has said, "excellent

reading for a surgeon." Samuel Sharp of Guy's Hospital, one of the leading English surgeons of the eighteenth century, in his "Critical Enquiry into the Present State of Surgery," a notable treatise translated into French, German and Spanish, says of Heister's Surgery that "it is in everybody's hands, and the character of Heister is so well established in England that any account of that work is needless." This reference to "character" gives the pleasing impression that Heister had gained the esteem of his English friends for his personal qualities as well as his surgical knowledge. Dr. John S. Billings, from whose interesting chapter in Dennis' "System of Surgery" we have learned most of what we know of Heister, in describing another eminent European surgeon, Hildanus of Berne, says, "he is sometimes called the 'Father of German Surgery,' although the title belongs more properly to Heister."

It is evident that Heister was a man of great energy, ability, and industry, and well posted in the history of his profession. He makes many references to the work of his predecessors and contemporaries and among the English authorities he quotes are Cheselden, Cowper, Winslow and Young (a naval surgeon who wrote much on the value of turpentine in surgery). Heister's style is a model for a text-book, clear, concise, interesting, and easy to read.

The only reference I can find to the work of Heister in English text-books is by Erichsen in his chapter on Injuries of the Spine, (see "Science and Art of Surgery," 10th Edition, Volume 1, page 814). Erichsen says, "As the fatal result of fracture of the spine with compression of the cord by the broken vertebra or by extravasated blood is almost inevitable, the idea has naturally suggested itself to surgeons that life might be prolonged and health perhaps restored if the same operation were extended to the spine which is successfully employed in analogous cases of injury to the head, namely, the elevation and removal, if necessary, of the depressed portion of bone. This operation, originally proposed by Heister, was first performed by Louis and Cline. In all cases of compound fracture the wound must be enlarged and any fragments removed." The following is what Heister says (Book 2, Chapter 6, page 174),—"But if the fracture is so extensive and severe that in consequence the spinal cord itself is crushed and wounded death as a rule follows quickly. Notwithstanding this, however, such a patient should not be abandoned. We must carefully investigate the condition of the fracture and if, perchance, we find fragments of the vertebræ quite detached, we remove them. For this purpose we must often make an incision. Should the fragments of these broken bones press upon the spinal cord we must, either with the fingers or with suitable forceps, elevate these, or, if they are quite loose, remove them entirely. Afterwards we must attempt to cleanse the wound of all impurities and apply balsamic medicaments, just as has been ordered for wounds of the spinal cord, see page 104." On referring to page 104 we find the surgeon cannot do better than apply Peruvian balsam or the essence of myrrh and amber. . . .applied warm on lint and bandage in place. And for the rest "commend all to God and Nature." Here it is evident that even if the fracture were not compound Heister would not hesitate to cut down on the fragments. Erichsen, doubtless, had some authority for his statement that this treatment was "originally proposed" by Heister but "first performed by Louis and Cline," yet Heister's description of the procedure reads like the work of one who had carried out the treatment.

A DESCENDANT OF JOHN HUNTER

On February 11th there died in the Sisterhood Home, St. Hilda's, Shirland Road, Paddington, where she chose to spend the evening of a life spent in well-doing, Miss Helen Hunter-Baillie, the senior representative of the Hunter family and a woman of exceptional ability. She was 85 years of age, and could read without glasses and retained her freshness of mind to the end. On the death of her sole surviving brother in 1895 she became "laird" of Long Calderwood—the birthplace of William and John Hunter, and also of Dorothea Hunter, who became the mother of Dr. Matthew Baillie, physician, and Johanna Baillie, poetess. The excellent state of preservation of the old farmhouse at Long Calderwood is owing to Miss Hunter-Baillie's care and vigilance, and to the keen and intelligent interest she took in all that pertains to the men who did so much to mould the progress of medicine in this country during the eighteenth century. Her father, Mr. William Hunter-Baillie, was the only surviving son of Dr. Matthew Baillie, and was born in 1797 within the school which Dr. William Hunter built in Great Windmill Street—a building which still serves as an annexe for the Lyric Theatre. He was educated at Westminster School and Balliol College, Oxford, was called to the Bar, and, although he never practised, did act for a time as marshal to his distinguished uncle Lord Denman. He inherited a fortune from his father, devoted himself to literature, society, and good works, and imparted much of his tastes and learning to his daughter, Miss Helen Hunter-Baillie. He lived for the greater part of his life at 96, Harley Street, and died in 1894 at the age of 97, and in his home Miss Hunter-Baillie met the leaders of literature and science of the nineteenth century.

XUM

She wrote in her retreat a small typewritten volume of valuable reminiscences, a copy of which is preserved in the library of the Royal College of Physicians of England. From it we learn that "she came out just as crinolines were coming in," and that she "thought the fashion charming." Her home atmosphere was strongly evangelical, but she and her sisters became ardent participators in the Anglo-Catholic movement. She gave herself to social service within the Church, and if private circumstances had permitted, would have given herself to the order of sisterhood. As it was she became an associate of the order, and laboured in lay missions for forty-six years, first in the East End of London, then at Lisson Grove. From her father she inherited a strong sense of justice—justice, or equality of opportunity, for women—but the means she advocated and pursued were those of reasonableness and patience. Her interests were many and wide, and, fortunately for students of medical history, she had a keen and true sense of what constitutes a "record." At an early date she began to collect all old letters which had come down in the family from the Hunters, Baillies, Jenners, Barons, Denmans, Crofts; and these she arranged and catalogued and bound in seven volumes, and presented this valuable collection of documents to the library of the Royal College of Surgeons. To Miss Hunter-Baillie and to her brother, Captain William Hunter-Baillie, the Royal Colleges are indebted for many valuable portraits and busts of the Hunters, Baillies, and also of Jenner. At the Hunterian Oration, given biennially in the theatre of the Royal College of Surgeons, she was always a welcome guest, and had assigned to her a place of honour, which she well became. Students of the lineaments of John Hunter saw in her face, head, body, deportment, and inquiring mind much which reminded them of those of her grand-uncle. She was keenly interested in the Hunterian Collections preserved in the museum and library of the College. Miss Hunter-Baillie is now represented by the children of her two younger sisters—Henrietta, who married the Rev. J. Maconechy of All Saints, Norfolk Square, and Agnes, who married the Rev. R. B. Oliver of Whitwell, Isle of Wight. In the Oliver family she had two nephews—the Rev. B. L. Baillie Oliver and the late Matthew William Baillie Oliver, F.R.C.S., whose early death three years age was a great blow to her. These two nephews have left no descendants. A daughter of Mrs. Maconechy became the wife of Dr. T. Battersby Jobson; of that marriage there are four children. Thus, of the ten children born to John Hunter and his wife Agnes Paul, in the farmhouse of Long Calderwood two centuries ago, there are now only eleven lineal living descendants, representing the fifth and sixth generations. Although these are all that are descended from the Calderwood branch of the Hunters, there is another line of the Hunters which traces its origin to a senior brother of the John Hunter who became laird of Long Calderwood. The representative of this senior branch is Colonel C. S. Hunter, D.S.O. (Reprinted from the *Brit. M. J.*, **2**: *361*, Feb. 23rd., 1929).

SIR CHARLES SHERRINGTON ON HARVEY.—"The work of Harvey, the spirit of it no less than the import of it, provides his eulogy and makes superfluous all other. His great discovery, aside from its intellectual worth, secured an item of knowledge than which no other single item has so served to grow, as from a seed, medicine as we now know it. And it was the reassertion, the rebirth, of the method of experiment which, wedded to observation, had created the medicine—and the surgery—of the civilized world to-day. To engender medicine anew is to engender a whole world of correlated knowledge; and an attendant world of beneficence no less. The circulation of the blood, the meaning of the heart, the light of a victorious method! May we not affirm that modern medicine does in fact start there? Harvey, founder of modern medicine! He would himself have felt no term can carry richer or lovelier praise from a grateful world."—*Brit. M. J.* **1**: 868, 1928.

THIRTY YEARS' SURVIVAL AFTER EXCISION OF TONGUE.—The following extract from a letter sent me by Dr. J. Robson Turner, Paisley, is self-explanatory, and may prove of interest to some of your readers. "A patient told me he had been at the funeral of R. F., aged 81, who had an operation at your father's [Sir William Macewen] hands for cancer of the tongue, thirty years ago. I thought the story so remarkable in the success of the operation, and the longevity of the patient, that I ought to draw your attention to it." The man referred to by Dr. Turner had an excision of the whole tongue, together with the glands in the neck, performed as stated. He was said to have been of a silent disposition prior to operation, but he became very loquacious after it, and was ever ready to give the students examples of his powers of speech. It was generally believed in those days that removal of the tongue rendered the victim mute, and this patient's performance accordingly created much surprise. In those days likewise the phonograph was a comparatively recent and marvellous invention, and Dr. John Macintyre of Bath Street, Glasgow, took a record of this man's speech on a wax cylinder, using a recording needle, and, later, let my father and a visiting American surgeon friend hear the result over the telephone, which, likewise, was still something of a novelty.—Mr. J. Macewen, *Brit. M. J.* **1**: 884, 1928.

Association Notes

The Annual Meeting, Montreal

June 17, 18, 19, 20 and 21.

The January issue (page 70) explained the General Plan of the Meeting and gave a list of Hotels with rates.

Have You Secured Your Hotel Reservations?

The February issue (page 197) outlined in detail the transportation arrangements under the "*Identification Certificate Plan.*" Since that date the following details are available, applicable to Western Lines.

TERRITORY AND DATES OF SALE

From British Columbia: June 11 to 17 inclusive, final return limit June 29, 1929.

From Alberta: June 12 to 18 inclusive, final return limit June 28, 1929.

From Saskatchewan, Manitoba and Ontario (west of Port Arthur and Armstrong): June 13 to 19 inclusive, final return limit June 27, 1929.

FARE BASIS

Round trip tickets to be sold at rate of fare and one half, plus 25 cents, upon presentation of Identification Certificate at time of purchase of tickets.

In addition to above a rate of *fare and three-fifths*, plus 25 cents, for round trip with return limit of *thirty days from date of sale* has been authorized.

ROUTES

Optional routes between Toronto, Kingston and Montreal.

Passengers purchasing tickets in Western Territory under Identification Certificate Plan may, on payment of $3.00 additional to rail fares be routed between Toronto or Kingston to Montreal via *Canada Steamship Lines* and thus enjoy the trip through the Thousand Islands.

In the March issue (page 309) *Information for Motorists* was forthcoming. We here repeat that anyone who plans to come to Montreal by motor and who is not familiar with the routes can obtain information by applying direct to the Montreal Tourist and Convention Bureau, New Birks Bldg., Montreal, when particulars concerning the roads and routes will be given and maps furnished by Mr. Geo. A. Grafftey, Convention Manager.

We had intended in this issue to print the Preliminary Program but it was thought well to introduce an historical sketch of Montreal, which will undoubtedly prove of much interest; it was considered necessary also to refer to the terms of Dr. Meyers' bequest and it was deemed unwise to burden the pages of the *Journal* with too much detail.

It will suffice for the present to announce, in order to whet your appetites, that acceptances have been received from all six of the overseas guests. They are, with their subjects:—

Professor E. Rist, of Paris. "*The Sudden Onset of Pulmonary Tuberculosis and its Lobar Localizations.*" (Lantern slides).

Professor L. Ambard, of Strasbourg. "*Significance of Hyperglycæmia in Diabetes.*"

Sir St. Clair Thomson, of London. "*Intrinsic Cancer of the Larynx: Lasting Cure in 80 per cent of Cases by Laryngofissure.*"

Mr. J. A. Cairns-Forsyth, of London. "*Surgery of the Biliary Tract and Pancreas.*" (Lantern slides).

Dr. D. P. Armand-Delille, of Paris. "*Diagnosis of the Early Stages of Pulmonary Tuber-*

culosis in Infancy and Childhood." (Illustrated by slides of x-ray films, coloured pathological slides, and mounted anatomical preparations).

Dr. G. B. Roatta, of Florence, Italy. "*Child-Welfare, the Basis of Public Health.*"

All of the above addresses will be delivered before the General Sessions in the afternoons of Wednesday, Thursday and Friday. In addition there will be presented at these sessions, French or English, or both, the following: —

Dr. H. H. Murphy, Kamloops, B.C. "*The Duty of the Doctor to the Hospital.*"

Professor Duncan Graham, Toronto. "*Differential Diagnosis of Clinical Conditions accompanied by Jaundice.*"

Dr. H. R. Clouston, Huntingdon, Que. "*An Hereditary Ectodermal Dystrophy.*" (Lantern slides).

Dean C. F. Martin, Montreal. "*Periodic Health Examination.*" (Illustrated by moving pictures).

Dr. Léo Parizeau, Montreal. "*The Harvey Film,*" a moving picture, depicting the experimental studies described in Harvey's "*De Motu Cordis.*"

Professor Stehle, Montreal. "*Acidosis in Anæsthesia.*"

Drs. Gaston Archambault and Alberic Marin, Montreal. "*The Modern Conception of Dermatology and Syphilography.*"

Dr. J. A. Baudouin, Montreal. "*Report of Employment of B.C.G. Vaccine, June, 1926 to May, 1928, by the Public Health Nursing School, Université de Montréal.*"

The various Sections (see January issue for list) have arranged programs to occupy the three forenoons, utilizing the hospitals, French and English, for operative clinics and clinical demonstrations.

Thursday, June 20th, will be "Osler Day." The forenoon session of the Section of Historical Medicine will be held in the Osler Library; in the afternoon the Library will be open to members; and in the evening in the Windsor Hotel the Osler Memorial address will be inaugurated. The speaker chosen for this occasion was the late Francis J. Shepherd, a contemporary of Osler's and himself an outstanding figure in the advancement of scientific clinical medicine. His recent and deeply regretted demise has robbed us of his presence but not before he had completed his address. A double importance will thus attach to this ceremony.

With this sketch of preparation we must for the present be satisfied, with apologies to the energetic chairmen of Sections who have laboured to complete in detail for this issue their full program.

GOLF

The Golf Tournament—"Ontario Cup"—will be played on Tuesday, June 18. Entrants should apply to Dr. Hanford McKee, 1528 Crescent Street, Montreal.

MONTREAL: THE CONVENTION CITY

I.—The French Régime

The story of the exploration and settlement of Canada by the French in the early years of the seventeenth century is one of entrancing interest. About it clings the glamour that always attends heroic enterprise, militant faith, and the picturesque setting of the past—the romance that has inspired poets, artists, and historians.

The expeditions of John and Sebastian Cabot, following hard upon the daring exploit of Columbus, did much to focus attention upon the *terra nova et incognita* to the westward, and bold navigators from England, France, Spain and Portugal soon made their way into the Gulf of St. Lawrence. One of these, Jacques Cartier by name, of St. Malo, discovered the Baie des Chaleurs in 1534, and the following year penetrated the River St. Lawrence as far as where Quebec and Montreal now stand. In September of 1535 Jacques Cartier arrived at Hochelaga, an Indian village that was located where now is McGill University. He was received in a friendly manner by the inhabitants, and, in the "*Voyages of Jacques Cartier,*" it is stated that the chief, Agouhanna, himself paralyzed and helpless, besought Cartier to touch him and so heal him, and also caused the sick, the maimed, the halt, and the blind of his tribe to be brought before him for the same purpose. It is a striking coincidence, as Dr. J. J. Heagerty, in his recent work, *Four Centuries of Medical History in Canada*, points out, that within a stone's throw of where this incident took place, the first recorded instance of the treatment of disease in Canada, arose some three centuries later the great medical school of McGill University.

For more than sixty years after Jacques Cartier finally left the country we have no clear record of what went on, further than it is known that hundreds of ships belonging to different nations visited Canada for purposes of trade.

But after that Canada became a cult. The lure of adventure, the call of the wild, and, perhaps, more than either, the glitter of prospective gold, beckoned to all peoples and to all ranks. Nobleman and gentleman, priest and nun, the medical man, the soldier, the sailor, and the simple peasant, answered the call. Port Royal (Annapolis), (1604), Quebec (1608), Three Rivers (1634), and Ville-Marie (Montreal), (1642) were founded at strategic points.

But in all this there was another influence at work, as great as, perhaps even greater than, any yet mentioned, namely, a consuming desire to evangelize the Indians, and one of the most efficient means to this end was to care for their bodies, as the Jesuit Father LeJeune at Quebec was astute enough to see. It is not generally known that the popular movement looking to the improvement of social conditions, the care of the sick, and the extension of missions, which spread over France about this time, derived its inspiration from the great St. Vincent de Paul (1576-1660), a man of singular piety, great devotion, and endowed with wonderful powers of organization. He may be truly called the founder of Social Service, through his establishment of the Order of the Sisters of Charity. His wonderful work, together with the publication of Father LeJeune's *Relations of the Jesuits*, it is not too much to say, lent a powerful incentive to the development of Quebec and Montreal, and were the direct causes of the establishment of the ancient hospitals of these two cities.

Jeanne Mance
(From a Portrait in the Chateau de Ramezay).

Even more than in the case of Quebec, the foundation of Montreal, in 1642, partook of the nature of a religious and missionary crusade, and in this connection four names stand out in high relief. The tale has been told more than once, but will bear repetition for the practical and the miraculous meet here in alluring juxtaposition.

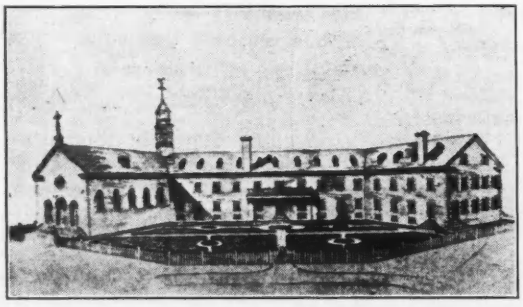
In the little town of La Flèche dwelt a civil servant called Jerome le Royer de la Dauversière. A simple tax-collector, "God called him to greater things," and in a vision he was directed to found an Order to care for the sick. Entering into this project with heart and soul, he established a community in honour of Our Lord and St. Joseph, located in a miserable dwelling, little better than a hovel, where three serving maids attended to the patients. The story goes that the first assistance the founder received in his noble project was a gift of two deniers from a child, and one from a poor woman. Pious faith has identified the former with the Christ-Child himself, and the latter with the Virgin Mary. But, de la Dauversière had dreams, also, of starting a hospital in New France, and of using the nuns of his new Order in its service. In this humble way the germ that was to produce the imposing hospitals of Montreal took root.

Full of zeal, and desiring to further his plans, de la Dauversière went to Paris in 1639, where he met the Abbé Jean Jacques Olier, one of St. Vincent de Paul's missionary priests, and the founder of the now rich and powerful Society of St. Sulpice, who also had his eyes fixed on the west. Without knowing one another, being led by the same Power from Heaven, the two enthusiasts met and joined forces in a common undertaking. In 1641 they formed a company, called "La Société de Nôtre Dame de Montréal," acquired from the King possession of the island of Montreal, and secured the valuable services of de Maisonneuve as Governor. Paul Chomedy, Sieur de Maisonneuve, had been a soldier from his youth up, but was a godly man withal, one also endowed with vision and enthusiasm, yet tempered with sound common-sense — an inspiring leader for such a dangerous and exacting enterprise.

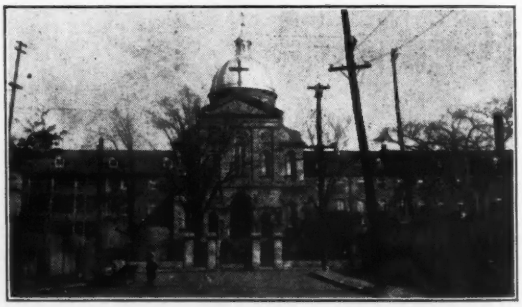
The fourth outstanding figure in this little drama was Mlle. Jeanne Mance, born about 1606 at Nogent-le-Roi, a village of Haute-Marne. She had long dreamed of going to Canada, but it was not until 1849 that she found herself free to indulge her wish. She set out for Paris. Her biographer tells us that "Many imagined that Jeanne, who lacked none of those external advantages which could make a person sought after in the world, would yield to the temptation of going to be admired in Paris. A somewhat "catty" remark! She was of far nobler mould than this, however. When she reached the great city she fell in with a rich and philanthropic widow, Mme. de Bullion, who confided to her her intention of founding a hospital, an intention inspired, it would seem, by the foundation of the Hôtel Dieu in Quebec by the Duchesse d'Aiguillon in 1639. She asked Mlle. Mance to take charge of it. Accordingly, the latter set out for La Rochelle, to take ship for Canada. Here the little company under de Maisonneuve was assembling, but de la Dauversière had not as yet found any capable person to take charge of the hospital which the Société de Nôtre Dame intended to build on the island. Again Heaven interposed. Without previous acquaintance, de

la Dauversière met Mlle. Mance, went up to her, greeted her by name, and was so impressed by her power of sympathy and gentle dignity that he offered her forthwith the post of Directress of the new Hôtel Dieu. Jeanne accepted and joined the party of de Maisonneuve. After a tempestuous voyage the little ship in which she was reached Quebec on August 3, 1641. De Maisonneuve was not so lucky. He was compelled several times to put back to France, which was unfortunate, as he lost several of his crew, including his surgeon. On reaching Tadoussac, M. de Courpon, admiral over the fleet of the Company of New France, generously permitted his own medical man to join the expedition. The man who had the honour of joining in this noble enterprise, and thus gained the distinction of being the first surgeon in Montreal, was LOUIS GOUDEAU.

Wintering at Quebec, the new colonists set out again, and on May 17, 1642, arrived at a place not far from where the Indian village of Hochelaga had been, for it was no more, which Champlain had selected years before as a suitable place for a settlement. The event was celebrated by a mass. The words of the officiating priest, Father Vimont, fortunately preserved for us by the Abbé Dollier de Casson, were singularly prophetic on this occasion. He said:



Ancient Hotel Dieu up to 1821.
(*St. Paul Street*).



The Present Hotel Dieu: Entrance Front
(*Pine Avenue*).

"That which you see, gentlemen, is only a grain of mustard seed, but it is cast by hands so pious and so animated by faith and religion that it must be that God has great designs for it, since He makes use of such instruments for His work. I doubt not but that this little grain may produce a great tree, that it will make wonderful progress some day, that it will multiply itself, and stretch out on every side."

The settlement was made at Pointe-aux-Callières, somewhere near the site of the present Custom House Square. After a fort and chapel had been erected work was begun on the hospital. Their generous benefactress started the institution with a sum of about sixty thousand écus, followed by other gifts amounting to sixty-two thousand livres. The poor were to be treated free of charge. Besides the money, the hospital was provided with five cattle and twenty sheep, at that time the only domestic animals in the country. It was not until the following year that the furnishings and medical stores arrived from France. On October 8, 1644, the Hôtel Dieu of Montreal was ready for work. Hardly was the structure completed when it was filled with the sick and wounded. For, almost from the start the brave little colony had to battle with the elements and with an even more relentless foe, the Iroquois. The hospital was situated at what is now the corner of St. Paul and St. Sulpice Streets. It was modest enough, being only sixty feet long by twenty-four wide; constructed of rough beams and having a roof of slabs, the crevices being filled with mud. The accommodation consisted of two rooms for the sick, one for Mlle. Mance, one for the servants, and one for a kitchen.

The history of the hospital is practically that of the colony; a history marked by patience, fortitude, and pious hope. The little settlement was always on the defensive and the Hôtel Dieu was almost as much a fort as it was a hospital. Many stirring incidents took place. Two, in particular, stand out as heroic. On one occasion, in 1644, de Maisonneuve and some of his soldiers sallied forth to repel an attack made by the Iroquois. Being hard pressed, and having to retire, the Governor was left behind by his men, and was engaged by the Indian chief. After a brief struggle, in which he nearly lost his life, for his first pistol missed fire, de Maisonneuve was able to kill the Indian. The incident is portrayed in one of the bas-reliefs on Philippe Hebert's striking statue of the Founder of Montreal in the Place D'Armes, situated not far from where the encounter took place.

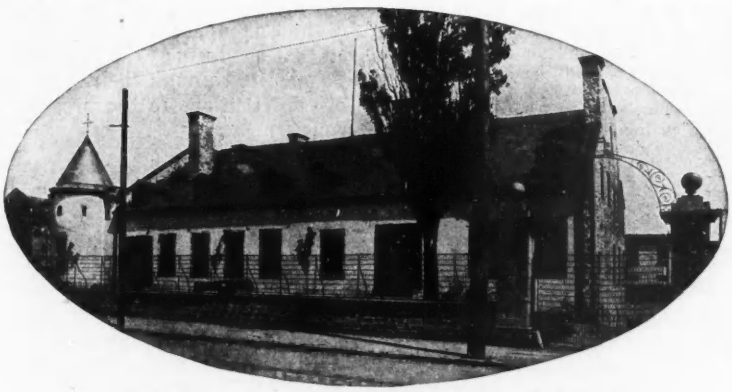
Again, in 1660, word came that the Iroquois were coming down the Ottawa River to attack Ville-Marie. Adam Dollard, Sieur des Ormeaux, a young man of only twenty-six years, with sixteen companions of his own race and a few friendly Indians, met them at the Longue Sault, near the present town of Carillon, where there was a dilapidated stockade. A desperate struggle took place; all the Frenchmen were slain,

and only three or four of their Indian allies escaped to tell the tale. The Iroquois had had their lesson, however, and the colony was saved. With some justice, Dr. W. H. Atherton, in his history of Montreal has likened this episode to that of Thermopylae.

Constantly depleted in numbers by the frequent and merciless attacks of the Indians, and disheartened by internal dissension, some lost hope, and more than once the little colony was on the verge of extinction. However it weathered every storm. Returning to France in 1657, Mlle. Mance brought back with her three sisters from La Flèche, to assist her in her work. They were Judith Moreau de Brésoles, Catherine Massé, and Marie Maillé, whose names we are delighted to honour.

Of the succeeding years we know comparatively little. Mlle. Mance died in 1673. She had wished her body to lie in the chapel of the hospital, and her heart to be placed in the parish church. As the construction of the new church was long delayed, her remains were placed in the chapel, and were destroyed in the fire which consumed that structure in 1695. All that now remains of Jeanne Mance is the fragrant memory of a noble life spent ungrudgingly in the service of others, and an inspiration that has been vital through two centuries and a half.

The Two Remaining Towers of the old "Fort des Messieurs," in the Grounds of the Seminary on Sherbrooke Street West, built in 1694.



Chateau de Ramezay, Notre Dame Street; built in 1705.

We have the names of more than twenty medical men who were in Montreal during the first forty years of its existence. Probably most of them were birds of passage, for it is hardly likely that so small a community could support so many. Among them, however, may be mentioned, Bouchard, surgeon to the Hôtel Dieu; Pécoté de Balestre, who formed a partnership with the famous Dollard for cultivating the land, and was the first medical man in Montreal to sign the word "physician" instead of "surgeon" after his name; and Jean Michel, who accompanied La Salle on his memorable voyage on the Mississippi from 1678 to 1683.

The next hospital to be founded in Montreal was the Hôpital General, established by the Frères Charron in 1692. It was transferred in 1747 to the care of the Grey Nuns, under the celebrated Mme. d'Youville, who became the first Superior. Its present representative is a large building at the corner of Dorchester and Guy Streets.

Not much is now left of old Montreal, most of the early buildings having been demolished in the ruthless march of progress. The fashionable part of the town was in the district extending from the Place D'Armes to Jacques Cartier Square, between Notre Dame and St. Paul Streets. Some of the houses of the rich merchants, distinguished more for their solidity than their elegance, can still be found, more or less disguised, on Notre Dame, St. Gabriel, St. Vincent, St. Amable, and Ste. Therèse Streets. They almost all date from the first half of the eighteenth century. The oldest building in the city is the manor house of the Sulpicians, close to the Notre Dame Church, which dates from 1684. Two round towers in the grounds of the Seminary on Sherbrooke St., all that remains of the old "Fort des Messieurs," were built in 1694. Here in the early days was a little Indian village, and the

western tower was used as a school. The farm house of the congregation of Notre Dame (St. Gabriel's farmhouse) at Point St. Charles was built in 1698. The church of Notre Dame de Bonsecours on St. Paul St., dating from 1771, but originally established in 1657, will likewise repay a visit.

The Chateau de Ramézay, built in 1705, is a good example of an aristocratic town house of the period. It has been, in succession, the residence of the French and English Governors, departmental offices, a court house, a normal school, and a museum. Just to the west of it was the house of the Baron de Beçancourt, which in 1800 became the property of the McGill family, and was inhabited by James McGill, the founder of McGill University.

A. G. NICHOLLS

THE MEYERS MEMORIAL

In bequeathing the sum of $100.00 per year, for a period of twenty-five years, to the Canadian Medical Association—the bequest to be known as the Meyers Memorial—the late Dr. D. Campbell Meyers designates the nature of the memorial in the following, as extracted from his will, and further supplemented in a letter under date February 27, 1927.

"As I desire to perpetuate the study of the prevention of insanity in certain of its types, to which my life has been largely devoted, and as I believe the treatment of this phase of nervous disease belongs to the general physician and the neurologist, I direct my Trustees to pay to the President of the Canadian Medical Association the annual sum of one hundred dollars, for a period of twenty-five years only, to provide an honorarium to be known as The Meyers Memorial, to be awarded by the Committee consisting of the President, a physician and a neurologist, (the latter two to be chosen by the President), to such member or guest of the Canadian or Provincial Medical Associations as shall write and read at the annual meeting of any of the said Associations the best thesis or dissertation on the study and treatment of those functional neuroses which, if untreated, or not treated sufficiently early, might probably terminate in insanity, in the hope that the further study of those neuroses will lead to the formation of specially equipped wards in General Hospitals, devoted to their study and early treatment, and more especially in those hospitals where teaching to the medical student as well as the nurse is given, such theses to be submitted to and adjudged by the above Committee. Should no thesis of sufficient merit in the opinion of the Committee be read at the annual meeting of the Association the said grant shall not be made for that year by my Trustees. I desire that my good friend, General John T. Fotherington, M.D., shall be appointed the first physician, and Dr. George F. Boyer the first neurologist on the said Committee, and that they shall continue thereon as long as they desire to act."

FURTHER NOTES ON THE FUNCTIONAL NEUROSES AS MENTIONED IN MY WILL

"As the present nomenclature of both functional nervous and mental disease is more or less transitory and may change materially in the next few years, it is impossible to classify definitely the type of disease referred to above. I desire, however, to refer to those functional neuroses in which the psychological symptoms form the essential part of the syndrome, and to that type of neuroses which develops in late adolescent or in adult life in a patient of previous good mental and nervous history, especially such neuroses as has its etiology in emotional overstrain caused by excessive grief, worry, and allied conditions to which modern life is so conducive, and which, when the present illness is successfully overcome, will enable the patient to at once return to his normal life as a good and useful citizen, and thus avert any of those persistent mental symptoms which so frequently remain as a result of a period of insanity.

"I desire to exclude from this thesis the study of mental defectives, paranoia, and similar conditions of mental disease due to hereditary or organic states, since the treatment of these conditions, however meritorious it may be from a humanitarian point of view, will not, I believe, remove the abnormal mental state of these individuals. Hence the best interests of the State will be obtained by the restoration to their normal health of those individuals, who previous to their illness were fully efficient as citizens."

Dated this 7th day of February, A.D., 1927.

(Signed) D. CAMPBELL MEYERS.

It is hoped by the Committee in charge of the Meyers Memorial that members of the profession interested will co-operate through their Associations, by way of contributions to the programs of their annual meetings.

Hospital Service Department Notes

A NEW HOSPITAL ASSOCIATION IN THE MARITIME PROVINCES

Another promising infant has been born into the family of hospital associations in Canada, and, if the vigour and enthusiasm manifested on its natal day are any indication, this latest addition, in Nova Scotia, should prove to be one of the most active members of the group.

The organization of this association in Nova Scotia is the result of negotiations which have been going on for some months between the various Maritime hospitals, and with our Department of Hospital Service. The hospitals of these provinces have been doing unusually fine work, and have enjoyed the support of the public to a rare degree. However, they have felt the need of closer co-operation and exchange of experience in order to give the public still more efficient service. The Catholic hospitals of this province have enjoyed membership in the Maritime Conference of the Catholic Hospital Association for several years, but they elected unanimously to join forces with the other hospitals in forming a more comprehensive association, which will function independently, but in close harmony, with the Catholic Hospital Association. Such a spirit of co-operation is most commendable.

UNION WITH NEW BRUNSWICK AND PRINCE EDWARD ISLAND

Many hospital administrators in the three Maritime provinces have felt that the hospitals of these three provinces should be united in one large association, and there has been considerable friendly correspondence between the hospitals on this subject. A few weeks ago, at a conference in Fredericton, it was decided to form a New Brunswick Association now and to keep in mind amalgamation into a Maritime Association as a development of the near future. Nova Scotia and Prince Edward Island would like to see a united association formed now, and the Nova Scotia delegates assembled at Truro, while proceeding with organization, expressed the desire to conduct further negotiations with the other provinces with this object of union in view.

At the organization meeting in Truro, on March 15th some twenty hospitals were represented, by over fifty delegates. A very strong executive was appointed:

Honorary-Presidents: Rev. Father Ronald MacDonald, New Aberdeen; Dr. J. G. MacDougall, Halifax; *President:* Major W. A. Fillmore, Amherst; *First Vice-President:* Sister Ignatius, Antigonish; *Second Vice-President:* Miss M. Martin, Windsor; *Secretary-Treasurer:* D. C. Sinclair, K.C., New Glasgow.

It was arranged to hold the first annual meeting in New Glasgow in August of this year, when the Board of Governors of the Aberdeen Hospital will act as hosts.

The medical profession was unusually well represented. Dr. S. L. Walker spoke for the Medical Society of Nova Scotia. The Secretary of our Department of Hospital Service was present by invitation and a number of others came at considerable inconvenience to themselves to represent their respective hospitals. At a time when the medical profession is frequently accused of taking very little interest in the general problems of the hospitals, such action emphasizes the fact that Canadian medical men are now taking a very active interest in the welfare of their "workshops."

SOME NOVA SCOTIA HANDICAPS

A number of interesting comments were made respecting the Hospital and other Acts. For instance, a "public" hospital is considered to be one receiving a municipal grant of five hundred dollars or over. Hospitals must cater to municipal favour lest this grant be withdrawn (it is not compulsory), and with it would go their *government* grants.

This government grant is thirty cents per patient-day for the first five thousand days—thereafter, it is twenty cents per day. This amount, fixed many years ago, is the lowest in Canada and is manifestly unfair to all, but especially to the larger hospitals.

The Workmen's Compensation rate, which varies from one dollar up to two dollars per day, is the lowest in Canada and is given for one month only. Thereafter the hospital gets no remuneration, unless the patient or the company pays, which is seldom.

G. HARVEY AGNEW.

THE HOUSEHOLD MEDICINE GLASS.—Dr. T. R. E. Hillier (London, N.W.) writes: A very large number of people nowadays use a medicine glass in place of the "domestic" measures—namely, the teaspoon, dessertspoon, and tablespoon. Theoretically, this is a step in the right direction, but let us see what it means in practice. I should say that 99 per cent of the medicine glasses in use by the layman (and by some doctors!) are in the shape of a diminutive tumbler. These are quite accurate when it is required to measure an ounce or half ounce, but I defy anyone to measure accurately a drachm with one—an ordinary teaspoon is preferable, though the size of these spoons varies a good deal. Now many medicines are prescribed in drachm doses, particularly in the case of children where the need for accuracy is even greater. There is only one common-sense form of glass, and that is a conical one, with a broad substantial base, marked clearly in teaspoons and tablespoons. Conical measures can, of course, be obtained, but they are almost invariably marked in drachms and ounces—of little use to the ordinary lay person. Moreover, people usually take what is offered them, and this is always the "little tumbler." Bottles marked with the doses may be suggested as a remedy, but most people pour out too much and will not be bothered to replace the excess, or too little, thinking it will be "near enough." All this may appear very obvious, but nevertheless I have proved it to be a matter of considerable importance.—*Brit. M. J.* **1:** 534, 1929.

UNDULANT FEVER.—In 125 cases of undulant fever that occurred in Iowa a clinical investigation made by A. V. Hardy revealed that most of the patients lived on farms or in country towns. The occupational groups chiefly involved were farmers and packing house workers. There was a striking variability in the symptomatology and course. The relative frequency and severity of the common symptoms is shown. Positive physical observations were few, the most frequent being an enlarged spleen. The temperature was generally intermittent or remittent, and undulations were not often apparent. Ordinarily there was a slight leukopenia and a decrease in the neutrophils. The diagnoses were confirmed by agglutination tests, almost always repeated, and, when possible, by blood cultures.—*J. Am. M. Ass.* **92:** March 16, 1929.

XUM

Provincial Association Notes

PRELIMINARY PROGRAM FOR THE FORTY-NINTH ANNUAL MEETING OF THE ONTARIO MEDICAL ASSOCIATION, TO BE HELD IN HAMILTON, ON May 28, 29, 30, 31, 1929.

OFFICERS, 1928-29

President—DR. E. A. McQUADE, Trenton.

1st Vice-President—DR. A. J. GRANT, London.

2nd Vice-President—DR. WARD WOOLNER, Ayr.

Secretary—DR. T. C. ROUTLEY, 184 College Street, Toronto.

Hon. Treasurer—DR. G. STEWART CAMERON, Peterborough.

THE COUNSELLOR REPRESENTATIVES

District No. 1.—DR. J. D. CURTIS, St. Thomas.
Essex, Kent, Elgin, Lambton, Middlesex.

District No. 2.—DR. A. J. McGANITY, Kitchener.
Brant, Waterloo, Wellington, Oxford, Perth, Huron, Norfolk.

District No. 3.—DR. MALCOLM STALKER, Walkerton.
Bruce, Grey, Dufferin.

District No. 4.—DR. J. H. HOLBROOK, Hamilton.
Haldimand, Lincoln, Welland, Wentworth, Halton.

District No. 5.—DR. GARNET McLEAN, Woodbridge.
Peel, York, Ontario, Simcoe.

District No. 6.—DR. F. C. NEAL, Peterborough.
Victoria, Peterborough, Durham, Northumberland, Prince Edward, Hastings, Haliburton.

District No. 7.—DR. L. J. AUSTIN, Kingston.
Frontenac, Leeds, Grenville, Lanark, Lennox, Addington.

District No. 8.—DR. W. S. LYMAN, Ottawa.
Carleton, Russell, Prescott, Glengarry, Stormont, Dundas, Renfrew.

District No. 9.—DR. W. J. COOK, Sudbury.
Algoma, Temiskaming, Sudbury, Nipissing, Parry Sound, Muskoka.

District No. 10.—Dr. J. C. GILLIE, Fort William.
Kenora, Rainy River, Thunder Bay, Patricia.

COMMITTEE IN CHARGE OF ANNUAL MEETING

President—DR. E. A. McQUADE, Trenton.

General Secretary—DR. T. C. ROUTLEY, Toronto.

District Counsellor—DR. J. H. HOLBROOK, Hamilton.

Chairman—DR. W. J. DEADMAN, Hamilton.

Local Secretary—DR. G. R. D. FARMER, Hamilton.

Ladies' Committee:
MRS. W. J. DEADMAN, Convener.
MRS. G. R. D. FARMER, Secretary.

Anæsthesia:
DR. D. A. WARREN, Chairman.
DR. W. CODY, Secretary.

Badges:
DR. I. CRACK, Chairman.
DR. E. Bagshaw, Secretary.

Eye, Ear, Nose and Throat:
DR. P. B. McFARLANE, Chairman.
DR. H. WHYTOCK, Secretary.

Commercial Exhibits:
DR. F. R. GILLRIE, Chairman.
DR. K. COOKE, Secretary.

Entertainment:
DR. ALLAN YATES, Chairman.
DR. G. HOUSTON, Secretary.

Housing:
DR. F. B. MOWBRAY, Chairman.
DR. W. T. CONNELL, Secretary.

Information:
DR. J. F. HOUSTON, Chairman.
DR. M. TEMPLIN, Secretary.

Medicine:
DR. W. F. NICHOLSON, Chairman.
DR. J. SIMPSON, Secretary.

Obstetrics and Gynæcology:
DR. W. BETHUNE, Chairman.
DR. J. T. GREEN, Secretary.

Pathology:
DR. F. B. BOWMAN, Chairman.
DR. T. G. HEATON, Secretary.

Pædiatrics:
DR. J. CARTER, Chairman.
DR. J. E. DAVEY, Secretary.

Publicity:
DR. J. P. FAWCETT, Chairman.
Dr. J. W. TICE, Secretary.

Radiology:
DR. L. R. HESS, Chairman.
Dr. W. G. CORNETT, Secretary.

Registration:
DR. W. J. BROUGH, Chairman.
DR. A. G. McGHIE, Secretary.

Surgery:
DR. I. OLMSTED, Chairman.
DR. O. W. NIEMEIER, Secretary.

Transportation:
DR. D. U. McGREGOR, Chairman.
DR. W. G. KENNY, Secretary.

Special Notices

The Committee on General Purposes, comprising the Officers and Board of Directors of the Association, Vice-Counsellors, Chairmen of Standing and Special Committees of the Association, and the President and one delegate per fifty members or part thereof of each affiliated Society, will meet at the convention headquarters, Royal Connaught Hotel, at 10.00 a.m. on Tuesday, May 28th. This notice will serve as the official intimation to all concerned. Delegates will please note the time. Officers of all affiliated Societies are requested to make arrangements for their representatives or their alternates to be present. It is most important that this Committee, which is the parliament of the Association, should be largely attended in order that the business of the Association may receive proper attention.

Canadian Society for the Study of Diseases of Children

The Canadian Society for the Study of Diseases of Children will hold its annual meeting in the Royal Connaught Hotel, Hamilton, on Monday and Tuesday, May 27th and 28th. An excellent program is in course of preparation. Members of the Ontario Medical Association who are interested in pædiatrics are cordially invited to attend.

Canadian Tuberculosis Association

The Canadian Tuberculosis Association has decided to hold its annual meeting in the Royal Connaught Hotel, Hamilton, during the week in which our convention is in progress. The scientific contributions from the Tuberculosis Association are being made to the general program of the Ontario Medical Association, the two notable visitors being Professor Roatta of Florence, Italy, and Professor Armand Delille of Paris, France. The Ontario Medical Association acknowledges with thanks the co-operation of the Canadian Tuberculosis Association in connection with the program which has been arranged for this year.

General Notes Regarding the Meeting

Time—Eastern Standard Time.

Headquarters—Royal Connaught Hotel, Hamilton.

Messages and Mail—All messages, telephone calls, and mail matter should be directed in care of the Ontario Medical Association, Royal Connaught Hotel, Hamilton, Ont.

Registration—The Registration Office will be found on the mezzanine floor in the Royal Connaught Hotel, and each visitor is requested to register immediately on arrival.

Accommodation—Rooms may be secured at the hotels approved by the General Committee, at the following rates:—

Single Rooms—$2.50 to $5.00.
Double Rooms—$3.00 to $10.00

Make reservations by writing to Dr. W. T. Connell, 433 King Street East, Hamilton, Ontario, Secretary of the Housing Committee. Please do this as early as possible.

Entertainment—Luncheons and dinners will be held daily. There will be plenty of golf, bowling, tennis, and motor drives. Arrangements have been made for dancing at the hotel each evening. Visiting doctors and their ladies are assured of a right royal welcome and a happy time in Hamilton.

Round Table Dinner—The Round Table Dinner, open to members only, will be held at 7.00 p.m. on Tuesday, May 28th. The program will be in charge of the Committee on Inter-Relations. From year to year this function has grown in popularity. A most interesting program is assured. Tickets — $2.00, obtainable at the Registration Office up to five o'clock on the afternoon of that day.

The Annual Dinner—The Annual Dinner, to which the ladies are invited, will be held in the Royal Connaught Hotel at 7.00 p.m. on the evening of Wednesday, May 29th. Following the Presidential Address by Dr. E. A. McQuade of Trenton and a brief address by Professor Roatta, of Florence, Italy, the remainder of the evening will be spent in dancing.

Alumni Dinners — Thursday evening, May 30th, has been set aside for Alumni Dinners. Active committees are in charge of these functions. A special party is being arranged for the ladies. They will be joined by the doctors later in the evening, at the dance.

Program—What the Committee believes will prove to be a most interesting program has been arranged for both the Sectional Meetings and the General Sessions, details of which are published herein. In addition to this, early morning clinics will be given each day at the hospitals by local members of the Association. Full particulars will be obtainable at the time of registration.

Parking—Arrangements have been made to provide ample parking accommodation for those who motor to the meeting. Full information at the Registration Office.

PROGRAM

Tuesday, May 28th

9.00 a.m.—Meeting of Board of Directors of Ontario Medical Association.

10.00 a.m.—Meeting of Committee on General Purposes of Ontario Medical Association.

2.00 p.m.—General Session.

1. Dr. J. G. FitzGerald, Toronto.

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"The general practitioner and the practice of preventive medicine."

2. Dr. W. B. Kendall, Gravenhurst. "Sanitarium routine."
3. Dr. Oskar Klotz, Toronto. "The growing importance of the diseases of middle life."
4. Dr. G. E. Richards, Toronto. "Radium treatment of oral carcinoma."

6.00 p.m.—Meeting of the Nominating Committee of the Ontario Medical Association.

7.00 p.m.—Round Table Dinner. (Royal Connaught Hotel). Program in charge of the Committee on Inter-Relations.

10.00 p.m.—Dancing.

Wednesday, May 29th

9.00 a.m.—Sectional Meetings.

11.15 a.m.—General Session.

1. Professor Armand Delille, Paris, France. "Treatment of pulmonary tuberculosis in infancy and childhood by artificial pneumothorax."
2. Dr. K. G. McKenzie, Toronto. "An outline of the diagnosis and treatment of neuro-surgical lesions of the spinal cord."

12.30 p.m.—Luncheon. Short Business Session of the Association. (Royal Connaught Hotel).

2.00 p.m.—General Session.

1. Dr. G. S. Fahrni, Winnipeg. "Goitre."
2. Dr. A. G. Fleming, Montreal. "The general practitioner in public health."
3. Dr. J. R. Williams, Rochester, N.Y. "The clinical interpretation of diabetes."

7.00 p.m.—Annual Dinner. Presidential Address, Dr. E. A. McQuade. Professor Roatta, Florence, Italy. "The effect of fascism on private practice and state medicine."

10.00 p.m.—Dancing.

Thursday, May 30th

9.00 a.m.—Sectional Meetings.

11.15 a.m.—General Session.

1. Dr. John Osborn Polak, Brooklyn, U.S.A. "Controversial points in obstetrics and gynæcology."
2. Dr. J. F. Burgess, Montreal. "Causative factors in eczema."

12.30 p.m.—Luncheon. Short Business Session of the Association. (Royal Connaught Hotel).

2.00 p.m.—General Session.

1. Demonstration of Teaching Methods, School for the Deaf, Belleville, Ontario.
2. Dr. Walter Timme, New York. "The endocrinological aspect of some medical problems."

3.30 p.m.—Garden Party at Oak Bank, the home of Dr. and Mrs. James T. Rogers, James Street South.

7.00 p.m.—Alumni Dinners. Ladies' Party. Dancing.

Friday, May 31st

9.00 a.m.—Sectional Meetings.

11.15 a.m.—General Session.

1. Dr. J. G. Cunningham, Toronto. "The physician's opportunity in industry."
2. Dr. Charles H. Mayo, Rochester, Minn. "The influence of nerves on abdominal viscera."

12.30 p.m.—Luncheon. Short Business Session of the Association. (Royal Connaught Hotel).

2.00 p.m.—General Session.

1. Dr. G. W. Crile, Cleveland, Ohio. "The interdependence of the thyroid, the adrenals, and the nervous system."
2. Dr. Duncan Graham, Toronto. "The differential diagnosis of superficial glandular swellings."
3. Dr. Howard Fox, New York. "Cutaneous manifestations of syphilis." (lantern slides).

SECTION OF EYE, EAR, NOSE AND THROAT

Chairman—Dr. P. B. McFarlane;
Secretary—Dr. H. Whytock.

Thursday, May 30th

9.00 a.m.—

1. Dr. G. L. Tobey, Boston. "Lateral sinus infection."
2. Dr. D. E. S. Wishart, Toronto. "Removal of foreign bodies in the lungs."
3. Dr. Geo. Hodge, Montreal. "The bronchoscopic diagnosis of carcinoma of the lungs and bronchi."

4. Dr. J. P. Morton, Hamilton,
"Nasal accessory sinuses."

Friday, May 31st

9.00 a.m.—

1. Dr. S. H. McKee, Montreal.
"The relation of the clinical laboratory to clinical ophthalmology."
2. Dr. Arnold Knapp, New York.
"The choice of operation in glaucoma." (lantern slides).
3. Dr. E. A. McDonald, Toronto.
"Some pathological lesions of the eye." (lantern slides.)
4. Dr. H. S. Gradle, Chicago.
(Title to be announced later).

SECTION OF MEDICINE

Chairman—Dr. W. F. Nicholson;
Secretary—Dr. J. Simpson.

Wednesday, May 29th

9.00 a.m.—

1. Dr. F. H. McKay, Montreal.
"Acute infections of the brain."
2. Dr. W. S. Lemon, Rochester, Minn.
"The influence of hæmorrhage on the diagnosis of diseases of the chest."
3. Dr. H. M. Young, Iroquois Falls.
"An unusual case of traumatic asphyxia."
4. Dr. William Magner, Toronto.
"Jaundice."

Thursday, May 30th

9.00 a.m.—

1. Dr. W. R. Campbell, Toronto.
"Indications for the use of insulin."
2. Dr. J. A. Macgregor, London.
"Visceral œdema."
3. Dr. Neil McKinnon, Toronto.
"Vaccination against smallpox."
4. Dr. G. A. McLarty, Toronto.
"Clinical manifestations of nervous syphilis."

Friday, May 31st

9.00 a.m.—

1. Dr. R. D. Rudolf, Toronto.
"Hypertension."
2. Dr. John Evans, Buffalo, N.Y.
"Oxygen therapy."
3. Dr. J. D. Little, Matheson.
"The social history in physical diagnosis."
4. Dr. G. C. Hale, London.
"The heart and the general practitioner."

SECTION OF OBSTETRICS AND GYNÆCOLOGY

Chairman—Dr. W. Bethune;
Secretary—Dr. J. T. Green.

Thursday, May 30th

9.00 a.m.—

1. Dr. J. C. Masson, Rochester, Minn.
"Pseudomyxoma peritonei."
2. Dr. H. D. Cowper, Welland.
"Eclampsia."
3. Dr. M. E. Gorman, Lindsay.
"Obstetrical emergencies in general practice."
4. Dr. A. G. Howson, Peterborough.
"Anti-natal care."

Friday, May 31st

9.00 a.m.—

1. Dr. G. W. Mylks, Kingston.
"Cervicitis."
2. Dr. Geo. Hooper, Ottawa.
"Some phases of pelvic inflammation."
3. Dr. Ernest Williams, London.
"Cancer of the uterus."

SECTION OF PÆDIATRICS

Chairman—Dr. C. Carter;
Secretary—Dr. J. E. Davey.

Wednesday, May 29th

9.00 a.m.—

1. Dr. F. F. Tisdall, Toronto.
"The elimination of deficiency diseases in Ontario."
2. Dr. R. I. Harris, Toronto.
"Recent advances in renal surgery of childhood."
Professor Armand Delille of Paris, France, will be present and will take part in the discussion.

SECTION OF SURGERY

Chairman—Dr. I. Olmsted;
Secretary—Dr. O. W. Niemeier.

Wednesday, May 29th

9.00 a.m.—

1. Dr. Ernest Janes, Hamilton.
"Osteomyelitis."
2. Dr. D. E. Robertson, Toronto.
"Osteomyelitis."

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3. Dr. John R. Parry, Hamilton.
"Hypertrophy of the prostate."
4. Dr. Geo. E. Binkley, New York.
"The treatment of inoperable carcinoma of the rectum."
5. Dr. Norman Shenstone, Toronto.
"Tuberculous empyæma."

Thursday, May 30th

9.00 a.m.—

1. Dr. G. H. Stobie, Belleville.
"Obstruction of the colon: cause, differential diagnosis and management."
2. Dr. A. Primrose, Toronto.
"The treatment of intestinal obstruction by the general practitioner."
3. Dr. W. E. Gallie, Toronto.
"The late results of the living suture operation for ventral and inguinal hernia."
4. Dr. H. Lyle, New York.
"Disabilities of the shoulder-joint." (lantern slides).
5. Dr. A. L. Lockwood, Toronto.
"A résumé of gastric and duodenal problems."

Friday, May 31st

9.00 a.m.—

1. Dr. H. B. Moffatt, Ottawa.
"End-results of gastric surgery."
2. Dr. G. A. Ramsay, London.
"Fractures pertaining to the motor accident."
3. Dr. R. A. McComb, Toronto.
"Surgery of the ureters."
4. Dr. Herbert Bruce, Toronto.
"The newer methods in the treatment of intestinal obstruction."
5. Dr. O. W. Niemeier, Hamilton.
"The acute appendix."

Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE BACTERIOLOGY OF CHOLECYSTITIS: A CLINICAL AND EXPERIMENTAL STUDY*

In the above paper, Dr. A. L. Wilkie pointed out that there is a wide diversity of opinion on the nature of gall-bladder infections. On the one hand, such observers as Hurst, Knott, and Venables assert that the colon bacillus is the organism most frequently responsible, and that it can be isolated from samples of bile obtained by the duodenal tube. On the other hand, Rosenow lays stress on the important rôle which the streptococcus plays in gall-bladder disease and the intramural nature of the infection. Illingworth, in Professor Wilkie's clinic, has obtained results which were roughly in accord with those of Rosenow, in that he found that the streptococcus was the most frequent organism recoverable from diseased gall-bladders removed at operation.

Dr. Wilkie felt that the failure of so many observers to find the streptococcus in diseased gall-bladders must have been due to some details in the technique. His work has been directed to investigating these factors, and to showing that an intramural streptococcic infection is by far the most common cause of gall-bladder disease. His material consisted of 50 consecutive cases of gall-bladder disease submitted to operation, including such types as early acute cholecystitis; early gall-bladder disease in which there was but slight thickening of the wall; slight thickening of the wall associated with a single cholesterol stone; advanced fibrosis of the gall-bladder wall without stone formation; and marked thickening of the wall with multiple stone formation.

At first Rosenow's method of culturing (1) the entire gall-bladder wall, and (2) the submucosa, was employed. He found that a streptococcus (as described by Rosenow) could be isolated in several cases from the submucosa, but only with very great difficulty when the whole wall was cultured, unless the bile itself was infected. It was apparent that the only difference between the two regions was that the mucosa was bathed in bile, and the influence of this factor was tested by treating organisms with sterile bile, using in each case the bile from the same gall-bladder in whose submucosal tissues the streptococci had been isolated. It was shown that a few drops of the bile inhibited the growth of the streptococci, and eventually killed them.

An important advance in the technique of culturing the organisms from the submucosa (which so far had never been reliable) was made by adopting a suggestion of Professor D. P. D. Wilkie, that the cystic lymph-gland should be carefully studied in all cases of cholecystitis. This gland has been shown to drain the entire submucous and outer coats of the gall-bladder. Dr. Wilkie laid great stress on the value of this technique in securing uniform types of organisms. Apart from the fact that cultures were obtained which were free from the organisms which might be present in the gall-bladder itself,

* Published in full in the *British Journal of Surgery* **15:** 450, January 1928.

Read at a meeting of the Montreal Medico-Chirurgical Society on January 4, 1929.

which he thought were secondary invaders, it showed the marked degree of lymphatic absorption which takes place from the wall of a diseased gall-bladder. Gross changes in the gland were frequently noted in cases of cholecystitis, and enlargement could be detected in early gall-bladder disease with or without stone. At this stage of enlargement streptococci could always be found in the gland. In the case of more advanced cholecystitis, however, the gland was more difficult to find and was sometimes completely hidden by the effects of advanced disease.

Dr. Wilkie then proceeded to show in detail the steps by which it was proved that streptococcus was the predominating organism in the cause of cholecystitis. *B. coli*, on the other hand, was recovered from the bile in only 6 per cent of cases, and in the one case in which it was recovered from the cystic gland contamination by bile could not be excluded. The chief deduction to be drawn from this group of experiments was that the streptococcus reached the gall-bladder by the blood-stream, and caused intramural changes which were the same whether the cystic duct was occluded or not. The intramural changes produced experimentally resemble in every detail the changes seen in the human gall-bladder in cholecystitis.

DISCUSSION

Dr. E. W. Archibald: We have just listened to a most excellent paper by one of our youngest members, and the quality of it stands out. We may congratulate Dr. Wilkie not only on the subject matter of the paper but also on his manner of presentation. It is not for nothing that the Scotch, who are an observant and intellectual race, have always condemned the minister who read his sermons instead of speaking them. Such a man could not be full of his subject and could not be inspired. I was glad to notice that our young friend here did not read his sermon. I need hardly say to the members present that this work of Wilkie's has already excited most favourable comment on both sides of the water, not only among surgeons, but among medical men, pathologists and bacteriologists. It goes beyond and enlarges the previous work of Rosenow, which some of us doubted; it overcomes the difficulties which caused the previous failures in the successful culture of the contents of the gall-bladder; it demonstrates the possibility of producing artificially and experimentally gall-stones and chronic cholecystitis; it fulfils the "vox populi" as applied to surgery. We have now a very definite idea of the cause of cholecystitis, in that we know how it actually occurs in the great majority of instances, and that leads on to a sound therapy.

It would take much too long to take up the various points of the paper and to compare this work with the work of others in the last few years. I will allow myself, however, one short reference to the work of Evarts Graham, of St. Louis. He thought that hepatitis caused the cholecystitis, or that cholecystitis, or gall-stones, caused the hepatitis; that it was a reversible process. That was going too far, and Wilkie has shown that it was going too far. I notice that Dr. Graham, in his recent article in the year-book, the annual publication on the progress of surgery, lays considerable stress on Wilkie's work.

Dr. Brown: I would like to ask what length of time you allow between the first and second injections.

Dr. Viner: I would like to ask Dr. Wilkie whether he has drawn any conclusion as to the possible source of the organism infecting the gall-bladder. Is it possible that the form of septicæmia in the tonsils and also in the teeth might be due to the same organism, and that that might be the original source of entry?

Dr. Wilkie: As to the length of time before the secondary injection, we give it every week after the first week; all the doses were given at weekly intervals. Some animals seemed to be more amenable than others, but we never had to give more than ten weekly doses to produce the infection.

Dr. Brown: It was in reference to the immunity question that I enquired about the length of time. The first injection would produce a ferment; the second would be control, but if it were given too early it might interfere with the immunity and the streptococcus could make headway in the body. As a rule, though, immunity runs up to about ten days. I do not know whether with frequent injections you might be able to overcome it.

Dr. Wilkie: That might be quite true. We simply observed that we were not able to produce anything with only one dose. Of course the immunity in streptococcus infection is such a complicated thing that I really do not know; I would rather not say anything about it. It is entirely different from specific immunity.

As far as the source of the streptococci is concerned, there are two theories which have been advanced. Some of the men in Edinburgh are at the present time working on the teeth and tonsils. But progress is very slow in things of that kind. In one case of tonsillitis which was cultured by them they got ten variations, which means that they would have to introduce these into ten separate animals to get anything definite. And as for the immunity reaction, even in working on animals the results are not really good enough. There are far too many organisms included under the name of streptococcus. If we could just prove absolute specificity, then I think the only way is to introduce it into the world by a new name and call it by that name.

In reply to a question as to the source of his own cultures Dr. Wilkie replied that they obtained them from the human gall-bladder after operation. He did not know whether the intestine could be a source. He concluded: Whenever you get a culture from any part in which there are so many different organisms it is difficult to separate them. I do not see any other way except to go through this work and try to get the organism out. The trouble is that there are so many others. We used twenty-seven different strains and injected twenty-seven animals, and none of these gave us cholecystitis, except one of which I heard not long ago. This is the first success we have had so far. At the present time the only way I can see is to go through them all. It is a very slow process.

THE ACADEMY OF MEDICINE, TORONTO

Consequent upon the various complaints voiced by the Fellows of the Academy in regard to certain activities of the Department of Health, there was appointed by the Council of the Academy of Medicine a Committee on Public Health Relations. This committee has met and discussed with the Department of Health, and with the Executives of the Home and School and Child Welfare Councils, various problems dealing with the examination and treatment of children of a pre-school age, and with various child welfare clinics. At the meeting of the Committee with the Executives of the last mentioned organizations, which was held at the Academy of Medicine on January 22, 1929, the

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discussion centred around the method to be adopted in order to have the pre-school child examined; whether this examination should be made through school physicians at the district school or by the family physician prior to the child's admission to school.

The latter method was strongly urged on the Executive of the Home and School and Child Welfare Councils by the Committee on Public Health Relations for three reasons:—

1. That an increase of school physicians would be needed to do this work thoroughly;

2. That this will be a means of impressing on the Fellows of the Academy the necessity of functioning more fully as preventive officers of health and of conducting among their families periodic health examinations;

3. That it is unfair to take away from the family practitioner legitimate practice which he is ably qualified to do.

It was stated in objection to this plan that the cost might be excessive, and hence, parents would not take their child or children to the family physician; that parents would rather go to the school clinic where a nurse was in attendance, where they were expected, and where every facility was afforded for the required examination.

It was finally agreed by the ladies present to place the Academy's view before their Executive and to make an effort in a few selected districts to have the examination of the pre-school child done by the family physician.

In a statement to the Fellows of the Academy, issued above the names of Dr. F. W. Marlow, President, and Dr. R. S. Pentecost, Honorary Secretary, the following appears:—

"The Council of the Academy would strongly urge the Fellows to co-operate to the utmost of their ability with the above mentioned organizations in every way; if, and when approached to make these examinations, to receive the representatives of both these organizations, the parents and the children sympathetically; to make the fee moderate, so that there can be no objections raised on that account; to use—and it is the hope of the Academy to make these easily available—a standard history form.

"We believe if the Fellows of the Academy seize this opportunity, many of the complaints with regard to the activities of the Department of Public Health and seeming encroachments on private practice will disappear inasmuch as vaccination and toxoid injections would be done automatically as the routine procedure at the time of the physical examination and subsequently in preparing a child for entrance to the school."

The program provided by the Academy for February included a special meeting on Thursday, February 21, at which the report of the Council and the Committee on Public Relations was received. It was apparent at this meeting that the Fellows of the Academy were disposed to endorse the findings of the Committee, as reported above.

University Notes

McGill University

In connection with the lamented death of Dr. F. J. Shepherd the Governors have passed the following "minute":

Resolved: That the Governors of McGill University record in this minute their expression of deep regret in the death of Dr. Francis James Shepherd, Emeritus Professor of Surgery and for many years Dean of the Faculty of Medicine. Full of knowledge and clear in thought, Dr. Shepherd patiently showed the way to higher standards and more thorough methods in medical education; he gave abundantly of his strength and vigour to the saving of the lives of his fellow men by the skilful application of his healing art, and to the training of students for careers of usefulness in many lands; by his vision, his forceful administration and his unfailing devotion to duty he contributed in large measure to the building up of the medical school of this university, which owes a lasting debt of gratitude to his efforts and which will ever hold in honoured memory his virile and versatile personality.

It has been announced that the late Sir Vincent Meredith, Bt., who was a Governor both of McGill University and the Royal Victoria Hospital, has left by his will the sum of $100,000 to each of these institutions. He also left $50,000 to the University of Bishop's College, Lennoxville, Que.

University of Toronto

Doctor Duncan Graham, Professor of Medicine at the University of Toronto, has been appointed temporary Honorary Physician-in-Chief at the Peter Bent Brigham Hospital, Boston, Mass. The Physician-in-Chief at this hospital is Dr. Henry Christian, who is also Professor of Medicine at Harvard, and each year he invites a distinguished physician to take his work for a week.

Dr. Oliver Raymond Mabee, a member of the staff of the Faculty of Medicine, died on January 13, 1929. Dr. Mabee had been on the staff from 1908 until the time of his death. A resolution of sympathy was adopted by the Faculty Council at its meeting on February 1st.

The Faculty of Medicine of the University of Toronto was represented at the Annual Congress of the Council on Medical Education and Licensure of the American Medical Association, held in Chicago, February 18th to the 20th, by Dr. E. Stanley Ryerson, Secretary of the Faculty, and Dr. Hardolph Wasteneys, Professor of Biochemistry.

E. STANLEY RYERSON

University of Manitoba

Professor A. H. Reginald Buller, head of the Department of Botany, has been selected for the fellowship honour by the Royal Society of London, England, and will be duly elected in the month of May. Dr. Buller has been carrying on research work, notably in connection with wheat, for the past thirty-two years. He is also internationally known as an authority on fungi.

Arthur T. Elders, B.S.A., M.S., has been appointed to the faculty of the Manitoba Agricultural College, as Assistant Professor of Agronomy. He graduated from the Manitoba Agricultural College with the degree of B.S.A., and later received the degree of M.S. from the University of Minnesota, where he specialized in plant-breeding and cytology. Prior to his new appointment Prof. Elders was Assistant Agrostologist at the Dominion Experimental Farm, Brandon.

University of Aberdeen

The extensive collection of weapons, arms, and curios, made by the late Sir Alexander Ogston, Emeritus Professor of Surgery in the University of Aberdeen, has been presented to the Anthropological Museum. The catalogue is in three volumes, and is illustrated with stereoscopic pictures.

University of London

The Senate has accepted with thanks an offer by the trustees of the late Mr. C. H. Clark of £10,000 for the establishment of a lectureship in the history and progress of preventive medicine and tropical hygiene, and also a grant of £1,000 from the Beaverbrook Fund for Medical Research, forwarded by the Prime Minister. The grant will be applied to the purposes of, and administered under the scheme for, the Thomas Smythe Hughes Medical Research Fund.

Professor W. E. Le Gros Clark has been appointed, as from September 1st to the University Chair of Anatomy, tenable at St. Thomas's Hospital Medical School.

A degree of Ph.D. has been instituted in non-clinical subjects for both internal and external students in the Faculty of Medicine.

Special Correspondence

The London Letter

(From our own correspondent)

A lay visitor to a big children's hospital in London would probably be appalled at what the sensational press would call the "ruthless extirpation" of tonsils and adenoids. A little closer investigation would reveal that, although the operation is, of course, in the hands of the surgeon, it is from the medical side that the large majority of cases are referred. This in itself should suggest that such children were ailing and that considered medical opinion believed the enlarged or diseased tonsils to be partly or wholly responsible for this. In 1924 the Board of Education appointed a committee to investigate the whole question of the incidence of enlarged tonsils and adenoids and the method and results of treatment. Naturally, mathematical accuracy is impossible in dealing with such a subject, but under the skilful chairmanship of Sir George Newman the committee has done a valuable piece of work in the four years 1924-28 and has issued an interesting interim report. Over 600 children were examined and of these approximately one-fifth were found to have normal conditions in the naso-pharynx and therefore served as controls. Heredity appeared to play an important part in the production of enlarged tonsils, while in investigating the social conditions and diet very little difference could be found between the affected cases and the controls. The affected children were very much more liable to "poor health" during the first year of life, and during the school age the incidence of infectious diseases was found to be uniformly higher among children with enlarged tonsils and adenoids than among normal children. Estimating the results of operations on the tonsils and adenoids is one of the most difficult tasks which faced the committee, and it is of significance that in some of

the children under observation spontaneous cure took place, and this was associated with as favourable a change in the general condition as is effected by operation. In the majority of cases operation is followed by immediately favourable results, but there is some evidence that this improvement is not maintained in every case. The committee proposes to continue its work and from what has been said here it will be obvious that there are many points to be investigated further.

Mention of the subject of iodine in its relation to health and nutrition now-a-days nearly always means a discussion on goitre and the thyroid secretion. Of this subject it is justifiable to be a little tired, and it is refreshing to learn more about iodine in its relation to other matters in the bodily economy. At Aberdeen there is an important agricultural research institution where it has been shown, among many other pieces of work, that by the addition of iodine to the soil in which beet is grown the yield of sugar may be increased by one-third. This is one of the many pieces of information contained in a recent report issued by the Medical Research Council in which Drs. J. B. Orr and I. Leitch discuss iodine in its relation to nutrition, both in the animal and vegetable kingdom. This remarkable substance appears to possess some fundamental significance for life which is not altogether understood, and this report will well repay careful study. It is one of the many critical reviews of a highly specialized subject which the Medical Research Council have published from time to time, and in the opinion of many workers this is one of the most valuable of the Council's functions.

With the growth of our big cities, both as regards population and buildings, the large city hospital will no doubt eventually give place to the country hospital with a small "collecting centre" in the city. In the meantime some hospitals have a "country branch" to which surgical cases especially are sent as soon as possible, but the bulk of London hospitals depend upon the services rendered by convalescent homes. While the provision of hospital beds is considered inadequate, taking the country as a whole, the provision of convalescent beds is in a considerably less favourable position. There are approximately only 23 convalescent beds for every 100 hospital beds and when it is remembered that many cases never admitted to a hospital are sent for convalescence the position appears to be very bad. The method of arranging for convalescent treatment is, moreover, a highly specialized task—one of the many performed for the big London hospitals by their indispensable "lady almoners." Multitudinous funds may be available, but it often happens that the very patient for whom such facilities are required is considered as ineligible for all of these! The present position in this country strongly suggests the need for some central body to investigate the convalescent home accommodation available, and to endeavour to co-ordinate the various bodies concerned, so as to make full use of what is at the best a somewhat meagre provision.

ALAN MONCRIEFF

London, March, 1929.

The Edinburgh Letter

(From our own correspondent)

Sir Alfred Ewing has intimated his intention of resigning from the Principalship of Edinburgh University on the 30th of September. Formerly Professor of Engineering at Tokyo and at University College, Dundee, he was appointed to the Chair of Mechanism and Applied Mechanics at Cambridge in 1890. From 1903 to 1916, he was Director of Naval Education under the Admiralty, when he succeeded the late Sir William Turner as Principal of the University. Sir Alfred came to office with the war still in progress. At that time he was engaged in very responsible work at the Admiralty, being the creator and head of the organization which intercepted and deciphered the enemy wireless messages. This war work at the Admiralty was so important to the nation that he consented to continue it during his first year as Principal, thus filling at one time two arduous offices, either of which alone would have strained the capacity of any ordinary man. During his tenure of office the university has passed through a period of great expansion. Thirteen new Chairs have been established, and several new Readers and senior Lecturers appointed. Many additions to the university property and buildings have been made, the most notable being the acquisition of the site known as King's Buildings, on the south side of the city. Here, on a fine open space, are the chemical laboratories and the departments of natural history and the new one of animal genetics. In addition, the department of surgery has been reconstructed and a clinical laboratory built at the Infirmary. The older branches of study for which Edinburgh has always been famous have not been neglected, while new departments especially on the scientific side have been instituted. Two new degrees—Doctor of Philosophy and Bachelor of Commerce—have been established. This in the face of the many difficult problems of post-war reconstruction is no mean achievement. Apart from the initiative and enterprise required all this has meant a heavy capital expenditure. The Principal

has been fortunate in securing many generous benefactions to meet the requirements of modern higher education, and to assist in the furtherance of his many schemes. Whoever follows after will have no easy task in filling the place of a Principal who has so successfully guided the fortunes of Scotland's premier seat of learning through the last few difficult years.

Last year 19,680 patients were treated in the wards of Edinburgh Royal Infirmary. This was an increase of 967 over the previous year's figures. Of these patients 4,326 were medical and 14,466 were surgical. The increased ratio of surgical to medical cases, a result of modern operative surgery, is of interest. Twenty years ago the relative figures were 4,104 medical and 6,828 surgical. Owing to improved methods of treatment patients are not kept so long in hospital now as was formerly the case. Twenty years ago the average duration of a patient's stay in the Infirmary was 26.4 days; last year it was 16.39. During the same period the average residence of patient in the surgical wards has been reduced from 23.4 days to 13.46 days . The new Astley Ainslie Institute, which is situated on the south side of the city, not far from the former residence of the famous Dr. Gregory, will be opened this year. It is intended for the after care of patients who are at present treated in the wards of the Infirmary. When it is fully occupied it will help to relieve the sadly overstrained accommodation in the Infirmary.

A case which has been before the courts for two years and which has excited considerable interest has recently been decided before the Sheriff in Aberdeen. A former student of Aberdeen University sued Professor Jack of the Chair of English Literature for £5,000, for alleged wrongful refusal to allow him to attend the Honours English class at Aberdeen University, alleging that this had wrecked his career. The Sheriff considered reports by the Senatus and reviewed the result of the student's appeal to the University Court. This latter had found it unnecessary to interfere with the decisions of the Senatus and dismissed the appeal. The Sheriff found that Professor Jack granted the student numerous interviews in connection with class and examination work. At these the student took up the attitude that he would answer questions only as he thought fit, and that the professor ought to apologize for the opinions that he had expressed on his literary work. The Sheriff found that the pursuer's failure to qualify for sitting the Honours English Degree Examination was not due to any action on the part of the defender, but arose solely from the pursuer's refusal to conform to the regulations of the university, and to accept its standard of teaching and methods and standard of examination. Professor Jack and the university were represented at the trial by council; the pursuer personally conducted his own case.

During part of January and the commencement of February, Scotland was visited by an epidemic of influenza. In Glasgow frost and fog conspired together to influence the situation. A mortality rate of almost similar extent to the record of the third week of January, 1922, was registered in Glasgow during the third week of 1929. Altogether there were 1,112 deaths in the city during the week, which represented an increase of 200 deaths compared with the previous week. Pneumonia, which followed many cases of influenza, was largely responsible for the high figure. During the last week of 1928 the death rate represented 19.5 per thousand of the population per annum. In the first week of the new year the figures rose to 31.2 per thousand of the population per annum; in the second week to 43.2; and in the third week to 53.4; during the third week of 1922 the record figure of 53.8 was noted. This figure of 53.4 for the third week of this year was the highest of any city in Europe. During 1928, the death-rate was equal to 13.7 per thousand of the population per annum. Edinburgh was visited by the epidemic at a slightly later date, and though it was able to benefit by the experience of Glasgow, influenza was still very prevalent. Of the 55,450 children on the roll of the Education Authority's schools 9,958 children were absent at one time Several of the hospitals discontinued their visiting days on account of the epidemic. The disease did not take a very serious form, and with ordinary care and treatment the patients were generally well again in a few days' time.

GEORGE GIBSON

23 Cluny Terrace, Edinburgh.

SOUND-PROOF DOORS AND WALLS.—Apropos of the campaign against unnecessary noise an article appeared in the London *Times* of February 5th, entitled "Quietness in city offices," which imparts much valuable information. This article deals with the application of absorbent materials to walls and ceilings, particularly a special seaweed from Nova Scotia.

The aim and object of mental hygiene is to foster and maintain mental health and consequently should begin with the first expressions of the instincts, emotions and impulses. The mental health of the child depends on the full development of the expressions of all its instinctive tendencies in harmony with one another.—*Health Bulletin*, Toronto, **8**: 3, 1928.

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Letters to the Editor

THE LATE COL. F. H. MEWBURN

To the Editor:

I have just received the March number of your valuable *Journal*, and was surprised and saddened to learn of the death of Col. F. R. Mewburn. Though a comparative stranger, I am constrained to add a tribute to his memory.

I first met him in 1915, when I was in charge of the C.A.M.C. Training School at St. Martin's Plains. He and his bosom friend Major Ings expressed a very strong desire to have horses assigned to them, and I applied for them through the usual channels, but got severely turned down. Later, I met him at The Duchess of Connaught Hospital, at Clivedon, where he and Mr. I. H. Cameron did the bulk of the surgery. Col. Mewburn and I happened to have adjoining wards, and I often had occasion to seek his advice and assistance, which was always most cheerfully given. He was most kind to me in this respect, and I shall never forget it.

He was a most indefatigable worker, busy all the morning in the operating room, and spending the afternoons in his ward, giving the closest personal attention to his patients there. So far as I know, he never took any recreation, and while many of his younger confrères were off playing golf, etc., Mewburn would be found, busy in his ward. I can therefore, fully appreciate and endorse, everything that has been so well said regarding him.

Sincerely,

J. A. SPONAGLE

Middleton, N.S., March 16, 1929.

A RARE CONGENITAL ANOMALY OF DEVELOPMENT

To the Editor:

The March number of the *Journal* contains an interesting report of a case of ectromelia, which recalls to mind a congenital abnormality occurring in my own practice about two years ago.

A young primipara gave birth to a living female child, in whom the whole left lower limb was wanting, not the slightest evidence of its existence being visible. So far as I could judge, there was complete absence of the left pelvic girdle. This unfortunate infant had also a fair-sized dorso-lumbar spina bifida, with protruding membranes, and a ventral hernia. She lived about ten weeks, dying from inanition and meningitis. It was not possible to get a post-mortem examination, or even an x-ray or photographic picture during life. I would like to be able to give a more definite and scientific report of this case, but I have no literature at my command bearing on the subject. Also the means for a thorough examination and study of such rare cases are not available in a country practice, especially among ignorant, superstitious people, who want to hide what they consider more or less a disgrace.

I may add, that quite recently this same woman was delivered of a perfectly normal child.

Yours truly,

GEO. ACHESON.

St. Martin's, N.B., March 20, 1929.

Topics of Current Interest

DIAGNOSIS OF EARLY PREGNANCY

Another reputed test for pregnancy has made its appearance, based on the hypothetical existence of a specific hormone modification. We referred last summer (June 2nd, 1928, p. 952) to A. C. Siddall's report of the discovery in the blood of a pregnant woman of a hormone which caused enlargement of the uterus and breasts. Now, in the *Zentralblatt für Gynäkologie* for January 5th (p. 15), S. Ascheim describes the technique and results of the test which he has devised with B. Zondek. He states that in pregnancy there are to be found in the urine very large amounts of the hormone of the anterior lobe of the pituitary body. To five infantile mice weighing from 6 to 8 grams are given subcutaneous injections of the morning urine of the patient to be tested, the amounts ranging from 1.2 to 2.4 c.cm. An injection of the urine is also made into a castrated mouse in order to test by the Allen-Doisy method the presence of ovarian hormone; this however, appears in the urine in pregnancy later than the pituitary hormone, and is found also in the urine of non-pregnant subjects. After one hundred hours the animals are killed and the ovaries are examined with the naked eye or with a pocket lens, or, in some cases, by serial sections. Aschheim describes threefold changes in the ovaries resulting from the action of this pituitary hormone: (1) the production of large follicles, which may ripen and burst; (2) bleeding into the proliferating

follicle; (3) luteinization of the theca and granulosa cells of the follicle, with formation of corpora lutea atretica. The last two of these findings signify a positive result of the test; follicular enlargement, although denoting presence of the hormone, is apparently induced by such quantities as are present in the urine of a small percentage of non-pregnant patients. Before the animals are killed the presence or absence of vaginal swelling, hyperæmia, and discharge such as accompany oestrus is noted; these signs are attributed to ovarian hormone, in the production of which the hormone of the anterior lobe of the hypophysis (in the view of Zondek and Aschheim) acts as a stimulant. The reliability of this test in the detection of early pregnancy appears, in the hands of Aschheim, to have been considerably greater than that of the other biological tests for pregnancy which have been described from time to time. In 318 urines from non-pregnant female patients the test was negative in 315; in 15 from male patients, negative in 14. Among 296 tests in pregnant women there were only 7 negative results; 56 cases of pregnancy of five to six weeks' duration gave 54 positive results, and 68 pregnancies of seven to eight weeks' duration 66 positive results. The earliest diagnosis made was in the case of a patient with thirty-three days' amenorrhœa. About one week after labour the reaction is no longer given by the urine, and after the death of the fœtus in the uterus the reaction is said to disappear in about eight days. Twenty-two cases of tubal pregnancy were tested; 16 gave a positive result, and the remainder—in which fœtal death had occurred some time previously—a negative result. Two cases of hydatidiform mole gave positive results, and in one a relatively small amount of urine (0.05 c.cm.) sufficed. Aschheim mentions a case of chorion epithelioma following hydatidiform mole in which the Zondek-Aschheim test was positive twenty-one months after hysterectomy, when nephrectomy was performed for metastasis; the hormone persisted in increasing concentration in the urine until death. It may be inferred that not the presence of the living fœtus, but that of living chorionic epithelium, is essential for a positive test; it is recommended that after the occurrence of hydatidiform mole the Zondek-Aschheim test should be performed at intervals for some months at least, in order to detect the possible presence of chorion epithelioma. In the same issue of the *Zentralblatt* (p. 22) L. Kraul and J. Rippel report their experience of the Zondek-Aschheim test in thirteen very early pregnancies, including one in which there had been eight days' amenorrhœa only, and eight of which were subsequently shown to be pregnancies of four weeks' duration; all gave positive results. In two cases a positive test led to the correct diagnosis of early pregnancy in myomatus patients in whom amenorrhœa might, it was thought, indicate either pregnancy or approach of the menopause. In ectopic pregnancy the result of the test depended on fœtal survival. A positive reaction was given in a case of hydatidiform mole in which no fœtus was found. Odescalchi has obtained good results in thirty cases of pregnancy in the later stages (see *Epitome*, February 2nd, para. 119). H. W. Louria and M. Rosenzweig record briefly in the *Journal of the American Medical Association* (December 22nd, 1928, p. 1988) the employment of this procedure in 132 cases. Their percentage of error was about 5, and they are confident that this can be reduced. The practical importance of such a test, if reliable, needs no emphasizing, but experiment on a large scale is necessary to establish its clinical value.—*Brit. M. J.*, **1**: 259, 1929.

MONKEYS AND HUMAN DISEASE

The position of the monkey and his relations in the evolutionary scheme has always been a subject of speculation and interest to every class of student. His near relationship to man is now generally admitted; how near is that relationship was disclosed at a meeting of the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine held on February 7th, when "Monkeys and human disease" formed the topic for discussion. The anatomical relationship between man, apes, and monkeys was epitomized by Mr. R. I. Pocock, F.R.S., late superintendent of the London Zoological Gardens. He pointed out that some of the most marked differences between true monkeys and apes is seen in their mode of locomotion. On the ground the monkey is a quadruped, the ape a biped, especially when young; in the trees monkeys are good climbers and jumpers, jumping for the top of a branch, while apes are poorish climbers, and jump for the under side of a branch. In fact, there is some evidence to suggest that the ape's arboreal activities are a secondarily acquired character—induced perhaps by pressure from his highest relation. Mr. Pocock considers that the most significant difference between man and other primates lies in the foot, and that man left the simian stem in relatively early evolutionary times. The other speakers considered this relationship from the point of view of disease. Mr. Lovell showed that many of the intestinal conditions of monkeys in captivity were caused by organisms found also in man. As in man, tuberculosis was a very common condition; however, there was a slight difference, in that monkeys were almost equally susceptible to both strains of mammalian bacillus, though deaths from tuberculosis were mainly due to the human variety. Little is known about the virus diseases of monkeys, but, as Dr. E. Hindle said, only in primates was it possible experimentally to develop yellow fever, poliomyelitis, and perhaps measles. Other human virus infections can, of course, be transmitted to them, but in these three diseases the monkey appears to be the only alternative host to man. Among the internal parasites virtually all the protozoa of man are found in

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apes or monkeys, but it appears to be possible that the malarias of man are biologically distinct from those of apes. The story is a different one with the worms, however. With the exception of the schistosomes practically none of the characteristic human worms occur in other primates. Accidental interchanges do occur, and in parts of Africa monkey forms quite frequently appear in man; but on the whole their faunas are distinct. An interesting evolutionary point was made by Dr. T. W. M. Cameron in connection with pinworms. The method of spread of these parasites is by personal contact, and this tends to limit the various species of parasite to the same host. Now pinworms occur in monkeys, and all the forms in primates belong to the same genus. The species in monkeys, however, are different from the human, and the more distant the relationships between the hosts the greater are the differences between the parasites. A somewhat similar state of affairs among the lice was pointed out by Dr. V. B. Wigglesworth. The family containing the human lice is limited to the primates; the genus in man is found only in apes, while that in monkeys is a different genus. The crab louse—the third member of the family—is only found on man and the gorilla. The evidence of the part played by apes and monkeys in the spread of human disease was, on the whole, reassuring; they may, however, as has been suggested in these columns (December 29th, 1928, p. 1184), play an important part in the spread of bilharzia disease, and it is just possible that they act as reservoir hosts for yellow fever. Dr. Andrew Balfour drew attention to the fact that in South America epidemics in monkeys of what might have been yellow fever often preceded epidemics in man of what certainly was yellow fever. The evidence, however, is still inconclusive. Certainly here, and in some other conditions, the monkey has been an essential laboratory aid, but to the hygienist his significance is relatively slight. In fact, as Professor Leiper pointed out, such of man's diseases as are common to him and the lower animals result from food habits and contact; and domestication is a much more important factor than blood relationship.—*Brit. M. J.*, **1**: 310, 1929.

A MEDICAL UTOPIA

In the February number of the *North American Review* Dr. G. W. Haigh, writing under the heading of "State medicine: boon or bogy?" proposes that the medical and surgical system of the United States Navy should be the model for a State or national service for the whole nation. In his opinion the time has come for serious consideration of the institution of State service, and by State medicine he means "not a service retaining all the deficiencies of the individualistic competitive form of medical practice, such as the panel system of Great Britain or the sickness societies of Germany, but an organization based upon the economic principle of the division of labour and designed to insure co-operation in supplying a public necessity; to wit, a complete, free, in time compulsory health and accident service maintained by each commonwealth." This proposition, he holds, is not more socialistic than is the provision of education for all children; further, whereas education concerns a part of the people for a part only of their lives, health concerns all the people all their lives. Such a public service the medical profession has failed to supply at a reasonable cost, and it therefore behoves the people to supply for themselves the necessary organization. This he admits would entail acceptance of the official medical man, and would do away with choice of doctor. The people, he argues, would benefit, and so would the medical profession, who would form a corps into which all newly qualified men would enter, and be stimulated rather than stultified by so doing. After about five years' work in a position analogous to that of house-officers they would be eligible to choose a specialty. As a rule older medical men would not be obliged to continue to do work which has ceased to interest them, and which they did just as well or better earlier in their career. Medical officers of higher ranks would be relieved also of emergency and night work, so as to be better able to perform their duties of supervision, teaching, and administration. Some glaring evils of competitive medicine would also be eliminated by systematic co-operation; thus overwork and overfatigue, leading to hurry, carelessness, and mistakes, would disappear. Dr. Haigh, in short, looks with favour on the idea of a regimented State medical service. Most of us in this country would prefer to look for other ways of remedying the evils of competitive medicine.—*Brit. M. J.* **1**: 312, 1929.

DISEASES INTRODUCED BY SLAVES IN PAST CENTURIES

Admiral E. R. Stitt, surgeon-general of the U.S. Navy, recently read to the American Society of Tropical Medicine a paper* entitled "Our Disease Inheritance from Slavery," which commands attention from one who is equally well known as a bacteriologist and an administrator. It is accepted that Greek culture was destroyed by an invasion of malignant tertian, and Dr. Stitt recalls Manson's "dismal prophecy" of what might follow if yellow fever reached the East by way of the Panama Canal. Were the Southern States, he asks, infected by the importation of disease from Africa? The fatal strain of small-pox was no doubt brought by Europeans from the Orient, but the mild type probably came from Africa, where inoculation was an old-established procedure. Benign ter-

* *U.S. Naval Med. Bull.*, October 1928.

tian already existed in America, but tropical malaria was brought in ships and the anopheles were there to keep it going; with it came blackwater fever, also prevailing extensively in Guinea. Filariasis exists in small areas of South Carolina and the West Indies, but as the noxa may kill the vector mosquito, it establishes itself with difficulty. Unable to find enough intermediate hosts, bilharzia is rare and guinea-worm has died out; so too has sleeping sickness; all three diseases are described among the diseases of slaves. Dysentery frequently decimated slaves on the voyage—it is reported that 250 died in a cargo of 600—but the disease was bacillary, the liver being "almost never" diseased. Both forms of dysentery, however, according to Dr. Jas. Boyle, occurred in Guinea. As to hookworm, Dr. Stitt met Looss in Cairo in 1905, when he had just found necator in pygmies from Central Africa; necator being the common form in West Africa, whence it passed to America. Of leprosy the United States has three centres; in California (from China), on the Great Lakes (from Norway), and in the Gulf States (from Africa). The disease tends to die out in the States; Hansen found no case among the descendants of 160 known Norwegian immigrant lepers. Syphilis became notorious at the siege of Naples in 1494; how then, Dr. Stitt asks, could it have been imported first into Europe by a few men who landed at Seville in 1493? Europeans spread it to the North American Indians, and often alcoholized them at the same time. Dr. Coutts also refuses to accept the traditional view of the introduction of syphilis to Europe by Columbus and his sailors. Yaws is something of a puzzle; it was often introduced, but what became of it? It closely resembles syphilis. Are they identical? Dr. Stitt asks. Yellow fever is probably of African origin; Sternberg said there was in every infected area in America a history of first importation and of previous exemption. One sentence from this interesting survey may be quoted in conclusion: "If, as I am convinced," Dr. Stitt writes, "yellow fever was introduced through slave ships into the United States by infected mosquitoes (which Stokes has recently shown can transmit the disease after three months), we have here a curse greater than any of the curses which the Egyptians suffered through the enslavement of the Jews."—*Lancet*, **2**: 1198, Dec. 8, 1928.

FEWER MEDICAL MEETINGS

In Memphis, recently, physicians of the community spent an evening debating the difficulties that have arisen from the fact that too many medical meetings insist on sharing the physician's time. The chief etiological factor seems to be the insistence of the American College of Surgeons that each hospital graded A must have an organized staff that meets once a month. The secretaries of hospital staffs have been forced to add scientific features to their programs to encourage attendance on these compulsory sessions. Most of the hospitals in Memphis are open staff hospitals, so that all physicians of the city are invited to attend the staff meetings. Memphis, according to the *Memphis Medical Journal*, feels that conditions there differ from those elsewhere in the country and that the American College of Surgeons ought to make an exception of Memphis. Actually the conditions in Memphis in this regard are not nearly so bad as in some other parts of the country. In some cities there are one or two medical meetings every night in the week from October to May. In a city like Chicago, with hundreds of hospitals, with special societies in all the medical branches, with a county society and almost thirty branch societies, with an Institute of Medicine and four class A medical colleges, the demands are almost insufferable. There has always been a plethora of pot-boiling manuscripts offered to the medical periodicals of this country. Since the hospital staff meetings have begun to demand so-called scientific contributions, the plethoric condition has assumed the purplish tinge of a fatal polycythemia. The *Memphis Medical Journal* has several cures to suggest for the present condition, including one joint hospital meeting each month rotating among the various hospitals, limitation of the meetings of the county medical society to one meeting each month, arrangements for joint meetings of the special societies with the county society, and similar amalgamations. Dr. Olin West, secretary and general manager, in his report to the House of Delegates of the American Medical Association last year, called attention to the fact that such multiplicity of meetings is a menace to the functional capacity of the county medical societies and that such overorganization must lead to division of loyalty, dissipation of effort, wasteful expenditures, and obstruction of scientific progress. The report of the Reference Committee of the House of Delegates, which was unanimously adopted, deprecated the compulsory multiple scientific meetings of hospital staff organizations. It pointed out that these meetings have tended to limit to small groups the dissemination of medical information and the discussion of medical problems, interfering thereby with the work of organized medical societies. The committee suggested that the staff meetings of hospitals be devoted preferably to executive discussions of problems relating to hospital economics and records, and that members of the American Medical Association make special efforts to stimulate interest in and the development of scientific medicine in the regularly organized county medical societies. The action taken in Memphis is an indication that the

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burden of multiple hospital staff meetings is beginning to hurt seriously. When a burden becomes too great or galls too painfully, even a beast of burden or a doctor will throw it off. —*J. Am. M. Ass.* **92**: 653, Feb. 23, 1929.

BAD HANDWRITING

"The illegibility of the handwriting of doctors has been a commonplace until the reproach bids fair to be laid aside with the advent of the typewriter. It was never entirely deserved, for no evidence was forthcoming that the doctor's ordinary correspondence was less legible than that of others. His prescriptions may well have been difficult to decipher by the average layman, written as they were in dog Latin, and containing pharmaceutical names with which he was not familiar. Moreover, there was no effort to make them legible to the patient; indeed, the intention was the reverse, for it was often inadvisable that the nature of the remedy or the dosage should be known to him.

Among doctors, as among other professional men, instances have been known of persons whose handwriting has been of three varieties: the first legible to the master's secretary or clerk; the second to the master alone; and the third to no one at all.

It is related that J. C. Loudon, the landscape garden designer, wrote to the Duke of Wellington for permission to visit and inspect the "Waterloo beeches" at Strathfieldsaye; in response to which the Duke, reading the signature as J. C. London, addressed his letter to the Bishop of London(Bloomfield), saying how pleased he would be to see him, and that he would order his servant to show him as many pairs of his breeches as he might wish to see, besides those he wore at Waterloo."—*The Medical Press* **127**: 148, Feb. 20, 1929.

Abstracts from Current Literature

MEDICINE

Erythrocyanose du Bras provoquée par l'effort. (Erythrocyanosis of the Arm Caused by Work). Pagniez, P. and Sicard, R., *Bull. et Mém. Soc. Méd. des Hôp. d. Paris* **37**: 1805, 1929.

This rare condition was described by the authors at a meeting of the Society on December 28, 1928. A young woman, aged twenty-five, presented a very curious functional disturbance of the circulation in the arm. Otherwise she was normal, save for a slight tendency towards obesity. She had been suffering for some months, without obvious cause, from pains more or less localized to the right arm, on making any muscular effort. After some weeks the pains disappeared, but were replaced by a slight circulatory disturbance which gradually increased in intensity until the time of examination. While at rest the two arms presented the same appearance, except that the right was about one centimetre larger in circumference, and were of the same temperature. On exertion, such as rubbing or washing, in a short space of time, erythrocyanosis appeared, beginning in the hand and extending up the arm until it reached the deltoid region. With this, the arm became swollen, the veins were distended, and the patient felt dull and somewhat giddy. In consequence she had to stop her work and rest. Then, after some minutes the attack would pass off. The condition suggested some obstructive disturbance at the point of origin of the venous system, including the capillaries. Physical examination, both general and by means of x-rays, failed to reveal any gross mechanical cause. The condition was thought to be due to some disorder of the sympathetic system. The authors were unable to find a similar case in the literature.

A. G. NICHOLLS

Interpretation of Roentgenograms in Tracheobronchial Gland Tuberculosis. Hawes, J. B., and Friedman, E., *J. Am. M. Ass.* **92**: 609, Feb. 23, 1929.

This paper is based on the x-ray examination of 109 children between the ages of 7 and 12 at the Prendergast Preventorium. Each child was a "contact" case, one that had had intimate and prolonged exposure to an active sputum-positive case of tuberculosis: in each case the child showed a positive skin tuberculin reaction, and other foci of infection, such as teeth, tonsils and adenoids, had been treated.

The x-rays were all taken by one man, and were grouped under the headings of (1) normal chests, (2) suspicious chests, and (3) bronchotracheal or hilum tuberculosis. These results were then submitted to examination by other roentgenologists and physicians; three of the former, a pædiatrician, and two physicians of long experience in tuberculosis and in the interpretation of x-ray films.

The result was a marked discrepancy in opinion. The three x-ray workers showed the greatest degree of agreement in their positive findings, but one of them regarded as suspicious nearly twice as many as those so regarded by his colleagues. The clinicians were more inclined to consider a chest as suspicious than

were the x-ray men; one of them found 18 positive cases as against 9 so considered by the others. One physician, however, considered only three of the chests to be positive, and thought that 82 were normal, the highest proportion given by any of the observers.

There were 29 cases in all that from the x-ray point of view were considered as positive for tracheobronchial tuberculosis by at least one of the six physicians. Analysis of these shows much disagreement. In no single case did all six reach a unanimous conclusion: in one case five agreed; in another four agreed. The first was a child aged 12, who was six pounds overweight, who had no suspicious symptoms, and in whom the physical findings were negative. The first x-ray, taken in 1923, showed, as did the last one in 1927, a much enlarged hilum, with calcification of the nodes both there and elsewhere. The only difference between the first and last x-rays was a marked decrease in the size of the hilum tissues and an increase of the calcification in the last one. Clinically, the child seemed to be a case not only of quiescent but also of healed hilum tuberculosis. In the second case the child was in good general condition and showed no signs of disease on physical examination. The x-ray was thought to be normal. But observation showed that she tired easily and had constant colds and an occasional rise in temperature.

The paper should be consulted for further analysis of these cases. The conclusion, however, is that no diagnosis of hilum tuberculosis should be made on x-ray evidence alone, even if this shows enlargement of the tracheobronchiel glands; calcification, especially when it was not shown by the first x-rays, indicates a healing or healed process, and does not call for institutional treatment. Repeated x-ray examinations are of great value for studying the progress of a case; selection of children for preventoriums should be based almost entirely on the fact of contact with open cases and a positive von Pirquet reaction.

H. E. MACDERMOT

Cerebellar Tumours Occurring in Identical Twins. Leavitt, F. H., *Arch. Neurol. & Psychiat.* **19**: 617, 1928. **Diabetes Mellitus in Twins**. Bunce, A. H., and Dougherty, M. S., *J. Am. M. Ass.* **92**: 52, 1929.

Inheritance of abnormalities is no better exemplified than in those cases of disease in identical twins. The above two articles are excellent illustrations of this, one referring to the occurrence of cerebellar tumours and the other to diabetes mellitus.

In the article reported by Leavitt the twins were boys of the same weight, height, mental and emotional characteristics. The first died at the age of six and a half years; the second at eight and a half, with exactly the same symptoms, namely, those of cerebellar tumour. Autopsy on one twin only was permitted. The tumour was a glioma of the cerebellum.

The second article, by Bunce, refers likewise to male twins identical in appearance, who developed disease, this time diabetes, at the age of twenty-seven years, within four months of each other. One had a convergent strabismus with amblyopia in the left eye; the other, a divergent strabismus with amblyopia in the right eye, suggesting mirror imaging in twins. Both had horizontal nystagmus of both eyes, partial bilateral deafness of a conductive type; both had marked hyperphoria. Such cases illustrate the marked influence of heredity, since symptoms, time of appearance of symptoms and outcome of case are almost identical in persons whose heredity is identical. Any disease arising in one twin should call for a thorough examination of the other twin.

MADGE THURLOW MACKLIN

SURGERY

The Tensor Fasciæ Femoris as a Cause of Deformity. Forbes, A. M., *J. Bone & Joint Surg.* **10**: 579, July, 1928.

One of the most frequent deformities following poliomyelitis is flexion at the hip. This is due usually to the unopposed action of the tensor fasciæ femoris, which muscle has been shown by Whitman to be only infrequently paralyzed. For this reason the view has gained favour that flexion at the hip joint should be attacked at the knee where the deep fascia, which may be considered as the tendon of the tensor fasciæ femoris, can be incised and lengthened. Dr. Forbes gives an excellent summary of the anatomy and function of this muscle. Chief amongst its actions is that of flexion and medial rotation of the thigh. As regards its stabilizing effect on the leg in extension, which is recognized as an important function, it must be remembered that this is purely a fixation action, not the production of a movement.

The chief deformity seen in connection with hip-flexion contraction is undoubtedly knee-flexion contraction, following naturally on the paralysis of the quadriceps extensor. In addition to this there is often eversion of the leg, and sometimes, inversion of the thigh.

The suggestion made by Dr. Forbes is that these deformities should be treated by transplantation of the fascia lata to the patella, although he points out that too much cannot be expected from this, since the tensor of this fascia is at best a muscle of little power, and it is being asked to replace a large and powerful muscle. He also recognizes that under certain conditions simple fasciotomy in the region of the knee may be of considerable value.

A detailed description is given of the opera-

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tion by which a portion of the lower part of the fascia lata is isolated, rolled into a tube, and pulled downwards and forwards to be united to the periosteum of the patella.

H. E. MACDERMOT

SURGERY

Diagnosis of Cancer of the Colon. MacAuley, C. J., *Brit. M. J.* **1**: 187, Feb. 2, 1929.

For clearness of description the author states we may regard cancer of the large intestine as exhibiting, from the clinico-pathological aspect, three distinct phases: (1) The pre-cancerous stage; (2) the latent stage; (3) the stage of observable clinical manifestations.

Recent work has shown conclusively that a very strong potentiality for malignant change is inherent in the simple intestinal adenoma. Cancer of the colon is invariably an adeno-carcinoma, and its mode of origin in a selected area of bowel is described by Dukes as follows: first, small localized areas of epithelial hyperplasia from which the adenomata arise; second the formation of adeno-carcinoma from one of these areas or in the neighbouring epithelium; and third, when carcinoma has developed, there is a tendency to undergo retrogression on the part of others. Adenomatosis can only be distinguished from ulcerative colitis by the use of the sigmoidoscope. In the latent stage cancer is definitely present, but betrays no sign of its existence. It exists either in the cauliflower growth which has not yet begun to bleed or to ulcerate, or as a constricting growth, the effects of which are being adequately compensated. In fact, the patient may accidentally discover the lump and this may be the first sign of the disease.

In the stage of observable clinical symptoms cancer of the colon takes two main forms: first, where the effects are produced by an ulcerating mass; and second, by progressive narrowing of the lumen. If ulceration is present there is excessive mucus, small quantities of blood due to traumatism of the ulcerative face, and septic material from the surface of the ulcer. Brown found that diarrhœa was present in 36 per cent of his proximal and distal colon groups; but in the former it was a true diarrhœa, in the latter it was rather tenesmus, attacks of which alternated with periods of obstinate constipation. When colonic irritability sets in in a person who has previously led a regular bowel life. the suspicion of cancer must be aroused.

In the case of an obstructing lesion there is delay of the fæcal stream, but for a time compensation is effected by the hypertrophy of the bowel above the lesion. As the constriction advances, hypertrophy increases and the more vigorous peristalsis thereby induced results in colicky pains. These pains are accompanied by flatus, and they are made worse by the use of purgatives. If the ileo-cæcal valve is incompetent coils of ileum producing the characteristic "ladder pattern" may be observed. In the proximal colon the growth is usually of the fungating cauliflower type, and forms a definite mass. Obstruction in this segment of the colon is rare, partly due to the nature of the growth, and partly due to the fluidity of the intestinal contents. In the distal colon tumour is not often felt. Some degree of obstruction is very frequent, owing to the encircling form of growth, the solid contents, and the diminished colon diameter. In the transverse colon the growth may be of either type, that is, cauliflower or constricting.

The diagnosis of colonic cancer rests on a careful history, physical examination, and examination of the stools for visible and occult blood, pus, mucus, and fragments of tumour tissue. There are two additional aids in the sigmoidoscope and the Roentgen-ray. In the lower half of the sigmoid the sigmoidoscope is an instrument of the greatest value. The author stresses the value of the opaque enema for lesions higher up in the colon.

The ulcerating type of growth may be confused with inflammatory conditions. Ulcerative colitis gives a rigid bowel wall and a typical "ribbon-like" appearance with the x-ray. Sometimes cancer of the pelvic colon and diverticulitis may be confused, but are distinguished not only by the x-ray, but from the fact that bleeding practically never occurs in the latter. Tumours in the right iliac fossa are to be distinguished from early actinomycosis, hyperplastic tuberculosis, and appendicitis.

R. V. B. SHIER

Varicose Veins: Their Modern Treatment by Sclerosing Injections. Murphy, P. K., *Brit. M. J.* **1**: 145, Jan. 26, 1929.

The principal points of interest to the doctor who intends taking up the treatment of varicose veins by sclerosing injections are: (1) methods of selecting cases suitable for treatment; (2) technique of injection; (3) choice of sclerosing fluid and strength of dosage; (4) number of injections necessary and intervals between each; (5) the pathological effects of injection on the vein; (6) after-effects and possible complications. The advantages of this method are that when properly administered injections are safe and certain in their results, cause little pain or discomfort, and the patient need not lie up.

Professor Sicard, of Paris, is the outstanding authority on this subject, the Hôpital Necker having a world-wide reputation. Sodium salicylate is the sclerosing injection recommended, although many other chemical substances have been employed, but, from the ex-

perience of Sicard and his colleagues, sodium salicylate is the most effective, safest, and gentlest in its after-effects, of all injections.

Contra-indications to Injection.—(a) Obstruction in the veins of the deep circulation is the most important. This obstruction of the deep circulation is ascertained by fastening a tourniquet below the knee and making the patient walk around the room. If no obstruction is present the swollen veins empty themselves into the deep circulation, and appear flat, but should occlusion exist the superficial veins become more swollen and the leg painful. Phlebitis of the deep veins is the commonest cause of obstruction, and phlegmasia alba dolens the most common cause of deep phlebitis. Dilatation of the veins of the pubic area should put one on guard. (b) Arteritis (intermittent claudication). (c) Cardiac insufficiency and advanced kidney disease. (d) Excessively high blood pressure. (e) Extreme old age. (f) Pregnancy. (g) Multiple uterine fibromata.

Technique of Injection.—The patient stands on a chair beside a table, thereby rendering the veins tense, a tourniquet being useless. The most prominent point of the most prominent vein below the knee is selected. Two 5 c.c. sterile glass syringes should be ready. If the veins are small the two syringes are absolutely necessary, but if the veins are large one is all that is needed. The size of the needle should be that of an ordinary hypodermic needle and the point should be very short. With the first syringe attached to the needle the vein is entered and blood withdrawn. The syringe is then detached, the patient made to lie down while the needle is in position, and the second syringe which contains the sclerosing solution is attached to the needle and the solution injected into the veins. Should the veins be large the injection can be made in one stage, with the patient lying down. When the patient is in the recumbent position the vein empties itself and the solution injected gets into immediate and intimate contact with the endothelium.

There are two causes of pain at injection: (1) injecting fluid outside the vein; (2) an irritation of the endothelial lining of the vein which gives a cramp-like and stinging pain extending the whole length of the limb, coming on towards the end of the injection. The patient should be kept lying down for about ten minutes after injection.

The Solution and Strength of Dosage.—The solution should be chemically pure and colourless. The first injection should consist of 2 c.c. of a 20 per cent solution. Two days later the second injection of 3 c.c. of a 30 per cent solution may be given, and on the third occasion 4 c.c. of a 40 per cent solution. Six c.c. of a 40 per cent solution should never be exceeded at one visit.

The number of injections necessary, and the interval between each, depend upon the number, extent, tortuosity, and calibre of the veins, and on whether one or both limbs are involved, but five or six injections as a rule are sufficient for each limb. Three to five inches of vein are usually occluded with 4 c.c. of a 40 per cent solution, but two injections of the same solution may completely obliterate the internal saphenous. There is no fixed rule as to interval between injections, a different segment of vein being selected each time, depending upon the amount of reaction of the previous injection. When ulceration occurs following injection it is due to the solution entering the perivenous tissues by: (a) injecting fluid outside the vein; (b) rupture of the vein from employment of a too strong solution, or an excessive quantity of a strong solution; (c) injecting small veins too rapidly, and (d) lack of asepsis.

After-Effects and Possible Complications.—(a) Perivenitis is the only important after-effect and, when this is excessive, rest, local applications, and a supporting bandage are advisable; (b) a pigmented brownish line which may persist for a long time.

Recurrence does not take place in veins which have been completely sclerosed, but new varices sometimes appear some months after treatment. These yield readily to further injections.

R. V. B. SHIER

The Impairment of Circulation in the Varicose Extremity. De Takats, G. *et al, Arch. of Surg.* **18**: 671, Feb. 1929.

Although the anatomy of the superficial venous system and the histology of normal and varicose veins have been extensively studied, the disturbances of venous pressure have only recently aroused interest. Venous pressure may be measured by the direct method by introducing an intravenous needle into a prominent subcutaneous vein, and connecting it with a graduated glass tube filled with 1 per cent sodium citrate solution, or by the indirect method, using apparatus devised by Eyster, Krogh, or others.

While the normal venous pressure in the superficial venous system varies from 8 to 18 cm. of water in the erect posture, it was found that in varicose veins, as a result of the insufficiency of the valves, the pressure ranged from 76 to 210 cm. of water. The predominant feature of varicose veins is therefore a marked increase in venous pressure.

Posture has considerable influence upon the venous pressure in varicose veins, the pressure being greatly reduced in the recumbent posi-

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tion. The wearing of an elastic stocking reduces the pressure approximately 20 per cent. Ligation of the saphenous vein just above the knee caused a marked immediate lowering of the pressure, but two weeks later the pressure had more than doubled, showing the futility of Trendelenburg's operation. The most efficient treatment of varicose veins seems to be excision of affected segments or obliteration by injections.

A study of carbon dioxide and oxygen content of blood from a varicose vein, as compared with blood from the cubital vein, showed an increase in carbon-dioxide content and a decrease in oxygen. This local anoxæmia and acidosis explain the nutritional disturbances of varicose tissues. Venous congestion produces the varicose eczema, the periosteal thickening, and the slow healing of varicose ulcers. The œdema is due to venous congestion, changes in the intimal lining of minute vessels as a result of the anoxæmia, and to secondary lymphatic block. In long-standing cases the œdema is not completely relieved by treating the varicose vein since the two other factors still remain.

Patients with varicose veins not infrequently have involvement of the arterial flow and it is advisable to recognize this by means of the histamine test before treatment is started.

P. G. SILVER

PÆDIATRICS

The Role of Infection in Rheumatic Children. McCulloch, H., and Irvine-Jones, E. I. M., *Am. J. Dis. Child.* **37**: 252, Feb. 1929.

The St. Louis workers present their observations from a study of one hundred and fifty rheumatic children. The incidence of first attacks of acute rheumatic fever reached its peak between the ages of ten and twelve, none occurring before the age of two years. The spring months showed the highest seasonal incidence. Seventy-five per cent of the total number of attacks were preceded by colds and sore throats, 14 per cent followed other infections, and in 11 per cent no infection seemed culpable. In the majority of the subjects upper respiratory infections were extremely common between the attacks of rheumatic fever. In those patients who were tonsillectomized while under observation, the frequency of recurrences was markedly reduced after operation.

Tonsillectomy is an important measure in combating the rheumatic infection, but must be followed by intensive after-care, attention to other foci of infection, and prophylaxis against upper respiratory infections. Prolonged care in a convalescent home does not favourably influence the frequency of recurrences after discharge. The best results are obtained in those living under good home conditions in whom nasopharyngeal infections can be successfully eradicated. Colds and sore throats, however mild, call for complete rest in bed.

A. K. GEDDES

Experimental Study of the Acid-Base Equilibrium in Children with Idiopathic Epilepsy. McQuarrie, I., and Keith, H. M., *Am. J. Dis. Child.* **37**: 261, Feb. 1929.

Indirect evidence in favour of the assumption of a disturbed acid-base balance in idiopathic epilepsy is found in the observation that the occurrence of seizures is favoured by procedures which have in common the effect of making the blood more alkaline. Procedures which tend to produce mild acidosis tend also to prevent or alleviate manifestations of the disease. The effectiveness of the ketogenic diet in preventing seizures is abolished if it is made to have a slightly alkaline instead of an acid ash.

In one dietary experiment lasting forty-one days there was shown to be an inverse relationship between the degree of ketosis and the number of seizures throughout the entire experimental period, except when the ketogenic diet was made to have a slightly basic ash. Induced alkalosis failed to produce attacks in two cases. Disturbance of the acid-base equilibrium is not the only factor, or even the main one, involved, but is an incidental accompaniment of a more basic disturbance in the physiology of the nerve cell.

LILLIAN A. CHASE

The Use of Bismuth in the Treatment of Children with Congenital Syphilis. Bronson, M. L., *Am. J. Dis. Child.* **36**: 6, 1928.

At the New Haven clinic for congenital syphilis thirty-one children between the ages of two years and twelve years had received bismuth at some time during their anti-luetic treatment. Potassium bismuth tartrate with butyn in uniform weekly dosage of one hundred milligrammes intramuscularly, regardless of age, was found very satisfactory. The drug is exceedingly well tolerated by children. The author reports favourably on the effects of bismuth in interstitial keratitis and syphilis of the central nervous system, and believes it to be distinctly indicated in all Wassermann-fast cases as well as in arsenic-intolerant cases.

A. K. GEDDES

The Monocyte in Active Tuberculosis. Blackfan, K. D., and Diamond, L. K., *Am. J. Dis. Child.* **37**: 233, Feb. 1929.

In a group of twelve infants and children with proved tuberculosis and five with clinical tuberculosis, the authors demonstrate the relationship between active tuberculous infection

and the presence in the peripheral blood of an increased proportion of monocytes and their derivatives. One phase of the local tissue reaction to tuberculous invasion is the overproduction of reticular cells; from these arises an increased number of monocytes, some of which are modified to become epithelioid and giant cells. Concomitant with the local tissue reaction an abnormal proportion of monocytes and their epithelioid cell derivatives appears in the blood. Using the supra-vital staining technique of Sabin, these workers confirm the results of previous observers in showing that active tuberculous infection is associated with a fall of the blood lymphocytes, a rise of the monocytes, and the appearance of epithelioid cells; that in healing tuberculosis the lymphocyte count rises and the monocytes and their derivatives (epithilioid cells) decrease. Thus a study of the blood by the supravital technique may be of diagnostic value in doubtful cases, and may aid in prognosis by showing the tuberculous process to be either progressing or retrogressing. An increased monocyte-lymphocyte ratio in the blood may be found in other diseases, such as congenital syphilis, but a persistently high monocyte-lymphocyte ratio together with the presence of epithelioid cells in the circulating blood usually means an active tuberculous lesion.

A. K. GEDDES

THERAPEUTICS

Roentgen-Ray Therapy of the Hypophysis in a Patient with Acromegaly. Allen, R. E., and Lisser, H., *Arch. Int. Med.* **42**: 703, Nov. 1928.

Association of true diabetes with acromegaly is strikingly frequent. The authors assume that the hypophysis produces alterations in dextrose metabolism by the antagonistic effect of its hormones on the secretion of insulin. They report a case which manifested polydipsia, polyuria, and polyphagia for twenty years, and a definite change in appearance and headaches for ten years. She had the typical acromegalic hands and face. A sugar tolerance test showed a high blood-sugar content with a high kidney threshold. After three days on a diabetes diet the polydipsia, polyphagia, and polyuria disappeared, and the headaches became less frequent. After nine months on this diet she lost 60 pounds, but the blood sugar curve did not improve. A course of x-ray therapy was followed by definite improvement in the sugar-tolerance curve. This is the first published experience of the effect of roentgen-ray therapy of the hopophysis on dextrose tolerance.

LILLIAN A. CHASE

The Treatment of Arthritis. Hall, F. C., *New Eng. J. Med.* **200**: 369, Feb. 21, 1929.

Results were reported on treating a group of 89 long standing cases of arthritis in whom infection had not been found. Infection appeared to be an existing factor in only 7 per cent of cases. All but 15 per cent were atrophic arthritis, possibly metabolic in origin. The average duration of the arthritis in patients when first seen was five years. The correctable features most commonly present were fatigue, dietary deficiency, endocrine deficiency, constipation, bad body-mechanics; deficient diet was especially common. Arrest of the disease or such marked improvement that arrest appeared imminent occurred in 66 per cent of the cases.

LILLIAN A. CHASE

On Myasthenia Gravis. Querido, A., *Nederland. Tijdschr. voor Geneeskunde* **36**: 1928.

The author has made a very full microscopic examination of various organs in this disease. He finds not only in the muscles but also in many of the organs collections of cells, composed of lymphocytes, polymorphonuclears, mast-cells, fibroblasts, and ripe connective-tissue nuclei, which are grouped about the capillaries and the small arteries and veins, and even infiltrate the walls of the vessels. He regards myasthenia gravis as a disease of the vascular system, and suggests the name "Perivasculitis chronica proliferans" for it.

A. G. NICHOLLS

PRACTICAL WINDOW FOR TRANSMITTING ULTRAVIOLET RAYS.—A. H. Pfund describes a practical window for transmitting ultraviolet rays which will be good for at least a year and which can be replaced at a cost of twenty-five cents. The transparent material chosen for the window is cellophane. At the present time cellophane windows are not on the market. It is believed, however, that they will fill a real want, and it is therefore suggested that charitable organizations, such as the visiting nurse associations and municipal departments of health, procure a supply of cellophane, get in touch with a carpenter who will make the frames, and, finally, bring the matter to attention of those who are in need of it. —*J. Am. M. Ass.*, 1928.

Medicine still is necessary! The *New York Times* is authority for the following: Mrs. Annie C. Bill of London, leader of a Christian Science group, said, on February 25th, last, at a service in the McAlpine, that "Humanity is not yet ready for the complete acceptance of healing by faith, and for the time being must accept aid from the medical profession. By faith, patients will become less and less dependent on doctors. That is the great advance which has been made by the Christian Science Parent Church." Mrs. Bill is the head of a movement in England and America which holds that faith should supplement rather than supplant medical care in healing.

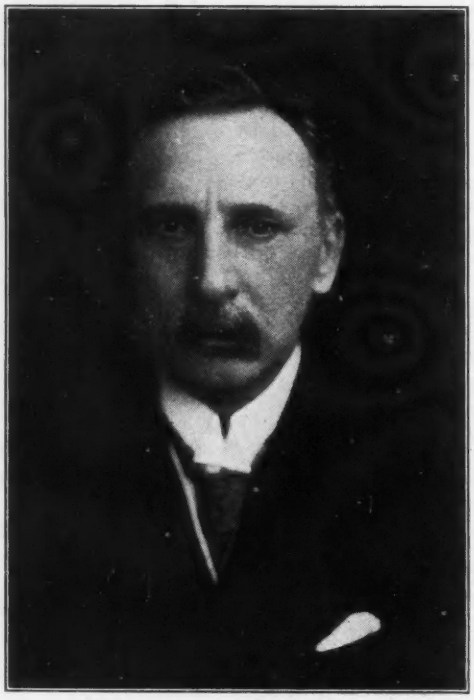
XUM

Obituaries

Charles Sheard, M.B., M.R.C.S., died on February 7th, at his home in Toronto, after a long illness.

Dr. Sheard was born in Toronto on February 15, 1856, son of the late Joseph Sheard, who was mayor of Toronto in 1871-2 and who came out from England in 1832. He was educated in Upper Canada College, Trinity University, Toronto, where he was a gold medallist in 1878; Trinity College, Cambridge; and by post-graduate study in Vienna.

He was appointed to the chair of physiology in Trinity Medical College, Toronto, in 1883, and, continued in the same till the amalgamation of Trinity and Toronto University Medical Department in 1904. He was also treasurer of Trinity Medical College 1892-1904, professor of Clinical Medicine, Trinity Medical College, 1891-1904, and Professor of Preventive Medicine in Toronto University 1904-12. He was business manager and part owner of the Canada Lancet 1887-1893, and member of the acting staff of Toronto General Hospital 1884-1905.



Charles Sheard, M.B., M.R.C.S.

AN APPRECIATION

Dr. Charles Sheard died recently in Toronto at his home on Jarvis Street in his seventy-third year. His death removes another link with the past but stirs an echo of the old exuberant days of Trinity and the Toronto School of Medicine. Born on McGill Street in 1856, his earliest recollection was the newsboys calling the news of the fall of Richmond along the streets of what was at that time Toronto —Toronto in the embryonic stage. The northernmost limit of the city was Queen Street, and what is now McGill Street was considered quite a way out in the country.

The seventh son of Joseph Sheard, a type of emigrant that now appears to be extinct, had landed at the foot of Church Street in the summer of 1832, the year that the town of York changed its name to Toronto. Six feet three and weighing over two hundred pounds, he stepped ashore with no possessions, but carrying in his hand, symbolically enough, a bag of tools, and in his heart a firm resolve to remain in the new country where wars and rumours of wars would never reach. The son and the grandson of soldiers, his father had fallen with the heavy cavalry on the field of Waterloo, leaving behind a widow and two sons, of whom Joseph, the younger, was an infant one year old at the time. His early struggles to help support his mother appear to have definitely turned his feet away from the paths of glory and the destination to which they invariably lead, but to have inspired in him a clear understanding of the value of storing up treasure in this world and the importance of work as a means to this end. He appears to have gotten off to a rather poor start, as he had been barely three weeks landed before he contracted typhoid fever, of which disease he nearly died. From then on, however, his troubles appear to have passed and he progressed from foreman carpenter, to builder, to architect. In the field of politics, too, he was not unsuccessful and was finally elected mayor of the city in 1871 and 1872.

Charles Sheard was greatly influenced by his father, who remained an ideal and an inspiration to him all his life. As so often happens in the case of the youngest of a large family, his father seems to have favoured him. They would go on long drives into the country together, expeditions for the purchase of building materials, particularly lumber, when the old Yorkshireman, usually uncommunicative enough, would unburden himself to the boy and pour out his store of worldly wisdom and instil his doctrine of rugged honesty. One incident stands out; it was the occasion of the first visit to Toronto of Lord Dufferin, then Governor-General. Joseph Sheard, as mayor, drove down Yonge Street, riding in an open Victoria, to the station—now the fruit market — but this day bravely decorated with flags and bunting. The crowd gave three cheers for Lord Dufferin, and some street urchin from a telegraph pole, catching sight of the mayor in such unusual grandeur, called out, "Lookit old Joe—three cheers for old Joe," which no doubt were duly given. Scenes like this did not fail to impress the boy — who, nearly bursting with pride, determined to go and do likewise.

He spent some years at Upper Canada College, walking home each day across the fields from the old college, then located on King Street, but he left without completing his matriculation, a fact which he later had occasion to regret. He became a clerk in Rose's drug store, then located on the south-east corner of Yonge and Queen Streets. In this position he obtained a knowledge of materia medica that he never forgot, and would say, "Good morning, Mr. Eaton," when the late Timothy Eaton would be sweeping up the front of his store across the way, before opening in the morning.

The doctors would come bustling into the store with an air of importance and it was not long before the boy conceived the ambition to become one himself. Having obtained his father's consent, and having completed his matriculation by reading at night, he entered Trinity Medical College in the fall of 1875. He was a good student and graduated with the gold medal in 1878. His student days were not without incident, but suffice it to say that he does not appear to have spent all of his time in study. Largely through the good offices of Dr. Geikie, the family physician, his father was persuaded to send him abroad, and so, crossing on the Bosnia, we find him in London, in the spring of the year 1878, where he was destined to remain four years.

He, in company with Luke Teskey, secured lodgings and proceeded with the study of anatomy at St. Thomas' Hospital and then, having completed the primary examinations, away to the congenial atmosphere of the great London Hospital on Mile-End Road.

How to describe the gas-lit splendours of the London of the late seventies and early eighties, the golden days of the Victorian Era, when London was in very truth the centre of the world; the wealth, pouring in on every side, contrasted with the bitterest poverty; the roaring traffic through the streets; and the puffing engines of the underground just beginning to be built! Great men walked the wards of the London Hospital, names that have passed into the mythology of that venerable institution; Sir Frederick Treves, then a young out-patient surgeon, Jonathan Hutchison, Mackenzie, Hughlings Jackson. He served them all as house physician or house surgeon, and finally, after four crowded years, off to Vienna, to attend the great skin clinics and watch Billroth's first thyroidectomy—the patient promptly dying from shock and hæmorrhage.

While in England several summers were spent at Cambridge in the study of physiology and in Creel's laboratories at London.

Returning to Toronto he was appointed to the chair of Physiology at Trinity Medical College and later to the professorship of Clinical Medicine, and took up what was really his life work—the teaching of medical students. He was the first to introduce in Toronto the microtome and the mounting and staining of histological and pathological specimens. As a lecturer, he was vigorous and picturesque. Are there any who still remember the course of lectures on digestion, completed by that poem beginning:

"Prima via ductus vitæ, has ere poet sung of thee?
Of thy rich digestive juices and thy intestinal sluices
Working all in harmony,"

given with due expression and to duly appreciative audiences; or his description of the tongue in scarlet fever "like a ripe, red, juicy, succulent strawberry;" or of that unfortunate sufferer from the smallpox "with a face like a well cooked pot of porridge"?

Succeeding generations of students passed through his hands and they remained throughout his life his greatest interest. The days of the old General Hospital and Trinity Medical College were always the golden days with him.

Appointed Medical Health Officer to the city of Toronto in 1893, he occupied that position for seventeen years, instituting, despite considerable opposition, sand filtration and chlorination of the water supply, innovations that were not reflected by a lowering of the death rate until some years after he had resigned the position in 1910. He was at times President of the Canadian Medical Association and the Ontario Medical Association.

Upon leaving the health office he devoted himself to politics. He took an active part in the election of 1911, stumping the ridings of Eastern Ontario in the interests of conservatism. He was returned to the Dominion House in the general election of 1917, sitting for Toronto South, and was re-elected in 1923, upon this occasion defeating the Hon. James Murdock, Minister for Labour, in a memorable close-fought contest. Upon the floor of Parliament he was known for his eloquence and freedom from acrimony. Perhaps his most notable speech was that in defence of titles. He had numerous friends on both sides of the house, particularly among the French Canadian members from Quebec.

But now the story draws in to its close. The light is failing and at last we see him raising himself with difficulty on his elbow from the bed, while he beckons the night nurse to his side, and for just a flash his voice rings out with its old time vigour, "Call the students." And then is still. He has gone to join those old friends, old Torontonians, practictioners and teachers of Medicine. They will know no distinction of faculty as they welcome their old colleague. Graham and Peters, Geikie, Davidson and Teskey, they will all be there. They will talk of their old cases and hold again their clinics in the Elysian wards. And Sheard will tell them that they are adding more laboratories now and that they are building the hospitals bigger, but they can't build the men any bigger. Those who carry on can but hope to follow where the pioneers have led.

The saw-bones that were black and red have long been laid aside, but the old esprit de corps, the éclat and the glory that was Trinity, can never pass away.

[The *Journal* is greatly indebted to Dr. Charles Sheard, Jr., and to Dr. Frank C. Trebilcock for this appreciation.—EDITOR].

Andrew James Cowie, M.D. (Pennsylvania, 1860), **L.R.C.P.** (Lond., 1897). The death took place in Halifax, on March 19, 1929, of Dr. A. J. Cowie, at the advanced age of 93 years.

"Dr. Cowie's father was born in Scotland in 1798, and came to Halifax in 1816. Very soon after, he removed to Liverpool and engaged in lumbering. In time he became both prosperous and influential with his lumber interests, milling and a large tannery, besides owning a number of vessels. Shortly after he moved to Liverpool the Episcopal Church there was opened, and from that time, until his death at the ripe old age of 92 years in 1890, he was warden of this church. Dr. Cowie's mother was Janet More. She was of Loyalist descent, her parents having been in the party of Loyalists, under the direction of Colonel Sylvanus Cobb, who settled in Liverpool in 1761.

"Dr. Cowie's school days were spent in the public schools and the Academy at Liverpool. The school curriculum must have been quite different from that of to-day, for when he left school at sixteen he had finished Euclid, had read Virgil and Cæsar and some Greek; he also had a working knowledge of navigation and land surveying. An accident in his father's mill at this time laid him up for a number of weeks and was responsible for a sea trip, which nearly led him to follow the sea as his life's occupation. Following his illness he took a trip in one of the vessels to the West Indies, and from there to England, and wishing to continue at sea he did not return to his studies. After three years he sailed on a clipper barque to South America with a Captain Sponagle, as second mate. On this trip he recalls very plainly an unusual storm in which the vessel nearly foundered as a result of what appeared to be a solid body of water many feet high moving rapidly across an otherwise fairly quiet ocean. It was a sorry ship and crew that finally limped into Rio Janiero. Here he came into contact with yellow fever.

"After this trip he went to London, passed his examination for first mate, and was ready to sail as such with a Captain Merriam, of Truro, when his father offered to send him to college. College however did not appeal to him, unless he looked forward to studying medicine. He was at King's College a year and, under the direction of Professor Howe, took a special interest in subjects that suggested a medical vocation. He was at this time in his twenty-first year when he went to Halifax and entered the office as a student under the direction of Dr. D. McN. Parker. For this tuition he paid a fee of $100.00. He kept accounts, put up prescriptions, made pills, tinctures, syrups, etc., and read everything he could find in Dr. Parker's splendid library.

"He had had considerable training in microbe work at King's College, and Dr. Parker, on the occasion of one of his visits to England, brought a microscope back

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with him. He then took up the work more extensively being perhaps the first physician in Halifax to use a microscope for medical work. He assisted at operations and gave anæsthetics, chloroform being then in general use. He entered the University of Pennsylvania in 1858 and graduated in the class of 1860. He returned to Halifax and opened an office over what was then known as Woodill Drug Store, corner of Sackville and Hollis Streets, which was kept then by Dr. James R. DeWolf, who later became the first Superintendent of the Nova Scotia Hospital. This corner still has its drug store, being now known as Fader's Pharmacy.

"Among those who were in practice when Dr. Cowie started in 1860 were Drs. Almon, Black, DeWolf, Hume and Gilpin (partners), Jennings, Slayter, and others. Shortly afterwards came Drs. Rigby, Woodill, Venables, and later Dr. Charles Tupper. For some time Dr. Tupper practised medicine in the city until his political activities required all his attention.

"Fees in those early days were not high when Dr. Cowie took a house on Argyle Street in 1865, his sister keeping house for him, two shillings and six pence for usual office consultations and visits for labouring men; for merchants and others of their ilk the fee was five shillings; midwifery, $8.00, which included nine days' subsequent attendance. Tonsils were removed in the early sixties for $5.00. These fees were remedied later by the local Medical Society, which was even then active. They met regularly at each others' houses and always refreshments were available for those present. There were no specialists in those days, but Dr. Cowie was under the impression that Dr. Jennings was the only doctor doing eye-operations.

"He recalled the first time he was called to consultation, the request coming from Dr. Jennings who was some eighteen miles down the Eastern Shore. It was in March with a cold driving easterly wind. He did not have a great deal of country work, but this drive with horse and trap was a very severe one. The case was one of contracted pelvis and resulted favourably for mother and child.

"Dr. Cowie was married to Mary S. More, of Halifax, having the same family name as that of his mother. They had three children who are living, a son and a daughter in Halifax, and a son in Wolfville.

"Two years after his marriage he went into partnership with Dr. Parker, who at that time had a large general practice. In 1861 smallpox was prevalent in Halifax city and county, and Dr. Cowie and Dr. Gossip were the city vaccinators and in charge of hospital patients. These cases constituted the first patients to enter the Victoria General Hospital, which was finished that year. Those admitted to hospital were those who could not be properly isolated in their own homes. The vaccine used was obtained from the marine supplies of the ships in the harbour. It was the English liquid vaccine. He never had in this epidemic a mishap following vaccination. The remuneration for this work was fairly reasonable at the time, being $10.00 per day.

"Dr. Cowie went to England in 1876, taking with him his wife, children and nurse. He spent the winter chiefly in London and passed his L.R.C.P. examinations in 1877. Leaving the children and nurse at Hastings, he and his wife spent three very pleasant months on the continent. When Dr. Parker took up consulting work and moved to Dartmouth, Dr. Cowie bought his residence and their partnership was dissolved. Dr. Cowie retired from practice ten years ago, having fifty-five years practice to his credit.

"He was living at Hillside Hall when he completed his fiftieth year. One evening after dinner he was called to the north end to make two professional calls. On his return he dropped in to spend a time at the Halifax Club. While there he received a telephone message that Dr. John Stewart wished to see him at his rooms at Hillside Hall. Here he found also present a number of doctors of the city, when he was presented with a handsome mahogany humidor, suitably engraved. This was followed by a supper. The occasion seemed to call for something out of the ordinary so Dr. Cowie produced a bottle of Madeira wine that had been brought to his home by one of his father's vessels while he was a sailor boy. It was a fiftieth anniversary which was recognized by a more than fifty years' vintage."—(From the *Nova Scotia Bulletin*, Sept. 1924).

Dr. Cowie is survived by a daughter resident in Halifax, and a son in Wolfville. Many will recall meeting him at the seventy-fifth anniversary meeting of the Medical Society of Nova Scotia. He had just reached his 93rd year, and many remarked the ease and gracefulness with which he carried himself. S. L. WALKER

Dr. Joseph Bascom, a graduate of the Toronto School of Medicine in 1880, died at Markdale, February 15, 1929. He had practised for the last twenty-five years in Markdale, moving there from Uxbridge. Dr. Bascom was a charter Fellow of the Academy of Medicine, and was a first Life Fellow of that institution.

Dr. Michael Callanan. Dr. Callanan died in St. Mary's Hospital, New Westminster, B.C., on February 21st, after an illness of more than two years. He had been a resident of British Columbia for forty-three years.

Dr. Callanan was born in Castle-view, Clonkilty, County Cork, Ireland, and, after graduating at the University of Dublin, came to Canada and settled in the North West Territories. While there, he took part in the Riel Rebellion. Shortly afterwards, he came to British Columbia, and engaged in practice in Nanaimo and Victoria for eight years. In 1894, he moved to Cariboo, practising at Barkerville and Quesnel, and in 1908 was made Conservative member for the Cariboo riding for two sessions, supporting the late Sir Richard McBride. Dr. Callanan retired seven years ago, and has resided in New Westminster since that time. He is survived by his widow, and two daughters. A son served overseas with the 29th Battalion, and was killed.

C. H. BASTIN

Dr. John Clarke Fenwick, of Winnipeg, died on March 2nd after a nine months' illness, and was buried in Elmwood cemetery on March 4th. Born in Sunderland, England, sixty-eight years ago, he was educated in medicine at Edinburgh University, where in 1887 he received the Jenner medal for surgery. For two years he was Professor of Dental Surgery in the Edinburgh Dental School. He was Major-Surgeon to the Durham Light Infantry and was greatly interested in military affairs. In 1911 he came to Winnipeg and from his arrival he was surgeon to the Workmen's Compensation Board. He was a director of the Victoria Hospital, Winnipeg. One son survives him.

The Hon. Dr. Richard Franklin Preston died at his home from pneumonia, on February 8, 1929, in his sixty-ninth year.

Born at Carleton Place, Ont., on October 24, 1860, Dr. Preston studied medicine at Queen's University, where he took his degree (1875). At first he engaged in farming, but eventually took up the practice of his profession, in which he was eminently successful.

Always interested in politics, Dr. Preston, was an outstanding figure in the Legislative Assembly of Ontario. He was at various times member for the north riding of Lanark. He was chief Conservative Whip from 1905 to 1914, and was taken into the cabinet in the latter year as Minister without portfolio.

Dr. I. O. Gadoury, a well-known local practitioner, died recently at Berthierville, following a prolonged illness. He was sixty-eight years of age. Dr.

Gadoury was born in Berthierville and educated at Joliette College and the old Victoria College, Montreal, where he studied medicine. He spent most of his life in Berthierville, and was very active in politics. For six years mayor of the town, he was also local member in the Quebec House.

Dr. J. G. Hutchison, of Grafton, Ont., died with great suddenness on January 21, 1929. He had been suffering from an affection of the heart for some time, but the seizure which carried him off had been quite unexpected.

Dr. Hutchison was born in Scotland in 1857, but came to the County of Huron with his parents when five years old. He was a graduate in medicine of Toronto University (1895). He first practised in Whitevale, but located in Grafton about thirty years ago.

Dr. Duncan Bell-Irving died at Vancouver on February 13, 1929. He was born on October 2, 1857, at Milkbank, Dumfriesshire, Scotland, one of a family of seven, the son of Henry Bell-Irving.

He was educated in Scotland and at Heidelberg, Germany, where he attended school and later the University of Heidelberg. He became assistant there to Professor Bunsen, the celebrated chemist, and studied under Kirchhoff, the famous physician. He was in Heidelberg from 1872 to 1877.

Dr. Bell-Irving went to Demarara in the West Indies and for a short time was identified with his uncle's business there, but that not being to his mind he went on an exploratory trip with some friends into the interior of British Guiana, and penetrated to the head-waters of the tributary of the Amazon. He returned to England, and studied at St. Thomas' Hospital for the medical profession from 1879 to 1883.

In the autumn of 1883 he visited Calgary, and from there went on via the United States to Victoria and Vancouver in the spring of 1884. In Victoria he met the late Mr. R. H. Alexander, then Manager of the Hastings Mills, who induced him to come to Vancouver as Medical Officer. He was Medical Officer in Vancouver, then called Granville, in 1884, when, owing to slack times due to closing of the lumber mills, he left for Australia and travelled there for several months.

On returning to England, he joined his uncle, Dr. George Bell-Irving, who had a practice at Stanmore, near London. While there he married Miss Ethel Hulbert on March 9, 1887.

Early in 1888 he returned to Vancouver and entered practice as a medical man. Later, he became Chairman of the Medical Association of Vancouver; organized the first Rifle Association and Rifle Club of Vancouver; became President of the St. Andrew's and Caledonian Society; President of the Pipers' Association; and was President of the Vancouver Club. He was largely instrumental in the formation of the first golf club on the Pacific Coast, known later as the Jericho Golf Club.

He had four children, one of whom, Duncan Peter, was the first Canadian Officer killed in the war in 1915; the other three surviving him. His wife died over a year ago.

Dr. Bell-Irving retired from practice many years ago and became identified with his brother's firm H. Bell Irving & Co. Ltd., as partner. He was a director in the firm until a few months ago, when he retired owing to ill health, and remained largely confined to his home until his death.

C. H. BASTIN

Dr. J. D. Lawson. It is with regret that we announce the death of Dr. James D. Lawson, of Saint Stephen, N.B., on March 1st, at the age of seventy-two years. Dr. Lawson took an active part in community affairs, having been Coroner of Charlotte County, Secretary for the local medical society, a Mason, and a member of the St. Andrew's Society. He leaves a wife, one daughter, and one son.

A. S. KIRKLAND

Albert Hugh MacKinnon, M.D., C.M. (Dalhousie, 1913). It was with profound regret that those members of the medical profession who had the pleasure of knowing Dr. MacKinnon, of Bathurst, N.B., learned that he was admitted as a patient into Camp Hill Hospital, where two weeks later on March 8, 1929, he passed away. After returning from overseas, Dr. MacKinnon located in company with Dr. L. D. Densmore, in Bathurst, N.B., where they developed a very extensive practice. Dr. MacKinnon was essentially a Nova Scotian. He was born at Pictou Landing, in 1887, a son of the late Hugh MacKinnon. After graduating from Dalhousie, he began practice in Upper Musquodoboit, and continued there until 1916 when he enlisted in the St. Francis Xavier Unit of No. 9 Expeditionary Hospital, C.A.M.C., in 1917, but transferred to No. 7 Canadian Expeditionary Hospital and returned to Canada with that unit in 1919. He was on the staff of Camp Hill Hospital until late in 1919, when he removed to Bathurst.

For several years Dr. MacKinnon waged a more or less successful resistance to tuberculosis but finally succumbed. He is survived by his wife, formerly Miss Maude Taylor of Stratford, Ontario; two young sons; and three married sisters. Interment took place at Pictou Landing with military honours. Dr. E. V. Hogan, of Halifax, his former commanding officer in the Dalhousie unit was present.

Dr. MacKinnon was a man who very easily made friends with his medical associates, being most genial and kindly in his manner. He made you certain that he was most friendly disposed to you. It will be a long time before some of us will forget his genial smile and the merry twinkle of his eye. Not even the insidious attacks of his fatal disease could rob him of this pleasing manner.

To Mrs. MacKinnon and the family, and to his friend of many years standing, Dr. Densmore, of Bathurst, the medical profession in Nova Scotia will at this time extend sincere sympathy.

Dr. J. E. Murphy, a graduate of Queen's University in 1893, died at Arnprior, late in February.

Dr. André Brisset des Nos. One of the best known members of the medical profession in Montreal died on February 1st at the Hotel Dieu, in the person of Dr. André Brisset des Nos. Born in France in 1866, he came to Montreal with his parents at the age of twenty and lived there ever since.

After taking his medical degrees at Laval University, he spent three years in Paris, specializing in gynæcology and hospital management. Upon his return he was appointed Professor of Obstetrics at the medical faculty of the University of Montreal.

One of the founders of the French Hospital (now the Hôpital Ste. Jeanne d'Arc), he was for many years chief medical officer of the institution. He was corresponding member of the Société d'Obstetrique de Paris; member of the medical commission for the examination of French reservists and recruits; and medical officer of the French consulate.

Dr. Brisset was very active in war-period activities. President of l'Union Nationale Francaise from 1913 till the close of the war, he was one of the charter members of the Patriotic Fund, to which he devoted much of his time. He was also one of the executives of L'Oeuvre des Prisonniers de Guerre Francais; member of the executive committee of the Provisional Aid for French Reservists, as well on the executive for the relief of war orphans.

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For his devotion to his fellow-countrymen, the French Government awarded him the Legion of Honour in 1927. He had previously received the gold medal for devotion and the palms of an Officier d'Académie. A member of the executive of L'Alliance Francaise, he was appointed major in the Canadian forces, 1916.

Dr. Alexander Turner, a graduate of the Western University of London in 1901, died at St. Thomas, on February 24, 1929. Dr. Turner served with distinction throughout the greater part of the great war, going overseas with the Western University Medical Unit. In addition to his active life as a physician, Dr. Turner was a member of the Board of Education, and for 1929 had been elected Chairman of the Internal Management Committee of the Board.

News Items

GREAT BRITAIN

Smoke Abatement

At a recent conference the Smoke Abatement League of Great Britain adopted a resolution expressing the opinion that the production of solid smokeless fuel is now upon a sound commercial footing, and calling upon local authorities in general, and health departments in particular, to take steps to popularize the use of such fuels, and so to help to solve the domestic smoke problem. In this work the League pledged itself to co-operate. A memorandum circulated to medical officers of health and public health committees advocates the organization of exhibitions, health weeks, lectures, and displays, and the widespread distribution of literature. Pamphlets in popular language are being prepared for this purpose. The memorandum states that there are now several excellent fuels on the market, which are superior to raw coal in respect of cost and efficiency, and are infinitely cleaner. Attention is also drawn to the value of the new qualities of gas coke, and to the advantages of gas and electricity over raw coal. The memorandum concludes: "It is hoped that progressive health departments and municipalities, recognizing the gravity of smoke pollution, will take immediate steps to mitigate the evil, and so restore the atmosphere to that state of purity which is essential to the health of every city and town."—*Brit. M. J.* **2**: 921, Nov. 17, 1928.

During the first part of the year ending June, 1928, the lack of secretarial assistance hindered the development of active propaganda work by the Smoke Abatement League, but some progress was made later. The annual report of the league mentions that at a conference last March, in Manchester, held jointly with other interested bodies, Dr. H. A. Des Voeux read a paper on the Public Health (Smoke Abatement) Act, 1926, the subsequent discussion being opened by Dr. R. Veitch Clark. A conference under the auspices of the Scottish branch was held in Glasgow in May, when it was decided to press for the application of a similar measure to Scotland. Efforts are being made to secure a wider measure of support for the work of the league by means of newspaper publicity, lectures, and correspondence with members and prospective members of municipal corporations. An appeal for subscriptions, which was addressed to about 290 local authorities, did not, unfortunately, secure a very cordial response. After the close of the year under review a conference was held at Harrogate, on September 29th and 30th, when the secretary of the league, Mr. Arnold Marsh, presented a report on an inquiry into the experience of users of solid smokeless fuels. This report contains an interesting summary of the advantages and disadvantages encountered in the employment of such substitutes for coal. In general, and notably in respect of heat efficiency, economy, and cleanliness, users have found the various brands of smokeless fuel on the market superior to coal. Copies of the report, and of a paper on the influence of air pollution on vegetation, read on the same occasion by Mr. W. W. Pettigrew, General Superintendent of the Manchester Parks Department, may be obtained from the offices of the league, 23, King Street, Manchester. The British Medical Association is represented on the council of the league by Dr. G. Clark Trotter and Mr. Bishop Harman.—*Brit. M. J.* **1**: 38, Jan. 5, 1929.

Gift for Medical Education

As a thank-offering for his escape with slight injuries in a motor-car accident last December, Lord Beaverbrook placed at the Prime Minister's disposal the sum of £22,800, expressing a wish that his gift should be distributed widely for the benefit of medical education in this country. It has now been announced from Downing Street that the Royal Society of Medicine will receive £2,800, and each of the following institutions £1,000: the Royal College of Physicians, the Royal College of Surgeons, the Medical Faculties of the Universities of Oxford, Cambridge, London, Durham, Manchester, Birmingham, Liverpool, Leeds, Sheffield, Bristol, St. Andrews, Glasgow, Aberdeen, Edinburgh, and Wales, Epsom College, the Cancer Hospital, and the Queen Charlotte's Hospital National Mother-Saving Campaign. The grant is to be applied in each case for special purposes beyond the capacity of the ordinary income of the institutions—for example, on studentships, research, and contributions to scientific equipment.

Up to the present time there has been no British journal devoted to the subject of urology. It is intended that this state of affairs shall be remedied and a large editorial committee has been formed, representing urologists in all the English-speaking countries of the world, to bring out quarterly a *British Journal of Urology*.

The New Year's Honours

The publication of the New Year's Honours has been unavoidably delayed on account of His Majesty's illness. It has recently been announced that Sir Berkeley Moynihan, Bart., the President of the Royal College of Surgeons, has been made a baron; Dr. Carrick Hey Robertson, of Auckland, New Zealand, is knighted; Professor Anne Louise McIlroy, of the Royal Free Hospital, becomes a Dame of the British Empire.

Very few medical men have been raised to the peerage in Great Britain, though the practice was not unknown in certain countries on the continent, such as Germany and Austria. Lord Moynihan is the second great surgeon to be thus honoured, the first being, of course, Lord Lister.

A Higher Birth-Rate in 1928

The report of the Registrar-General, dealing with the vital statistics for 1928, shows that the birth-rate was 16.7 and the death-rate 11.7, while the infant mortality rate was 69. As compared with 1927, the birth-rate is slightly higher, the death-rate slightly lower, and the infant mortality rate is the lowest on record.

PRINCE EDWARD ISLAND

The Charlottetown Medical Society meets every two weeks. Papers on various subjects, delivered by the local men, followed by general discussions, render these meetings very profitable to all.

Dr. P. A. Creelman has been appointed full-time Public Health Officer for Prince Edward Island. Drs. S. R. Jenkins and P. A. Creelman attended the meeting of the Health Committee appointed by the Federation of Life Insurance Companies at St. John on March 4th. They report that the members of this committee were highly gratified at the progress being made throughout the Maritime Provinces in Public Health matters. The money grant of this organization in aid of public health measures in the Maritimes was substantially increased.

The Red Cross Society has done much valuable pioneer health work in Prince Edward Island during the past few years. Miss Mona Wilson, with the aid of a capable staff of nurses, has organized a very efficient system of medical school inspection. In addition to this, numerous free clinics in tuberculosis and orthopædics have been conducted at various centres throughout the Island. All of which has not only helped the patients concerned, but has also stimulated an ever widening interest in public health matters which augurs well for the future. The Board of the Red Cross Society, Miss Wilson and her nursing staff, are deserving of the highest praise for this valuable work.

The Prince Edward Island Hospital has recently appointed Dr. Marion Irving of Halifax as full time pathologist to the hospital. Dr. Irving comes to us from the service of Dr. Smith, Professor of Pathology, Dalhousie University.

J. W. MCKENZIE

NEW BRUNSWICK

The campaign to provide immunization against diphtheria in school children, in Saint John, shows every prospect of being a complete success. The organization of the clinics was in the hands of Dr. Wm. Warwick, Medical Health Officer of Saint John County. The necessary toxoid was provided through the Provincial Department of Health, by the co-operation of Dr. H. I. Taylor, Minister of Health, Dr. G. C. Melvin, Deputy Minister of Health, and Dr. H. L. Abramson, Provincial Bacteriologist. The campaign has had the undivided support of the medical profession, Board of School Trustees, and publicity has been freely given by the local press and through the broadcasting station CFBO in Saint John, a number of prominent physicians having broadcast informative talks for a number of weeks through the courtesies of the owners of the station. A determined effort is being made to include as many of the pre-school age children as possible. When the campaign is completed it is estimated that 10,000 children will have been protected against diphtheria.

In a recent interview given to the local press Dr. H. A. Farris, of the Saint John Country Hospital, announced that it was the intention of the Department of Indian Affairs to provide a fixed number of beds at the Saint John County Hospital, and a similar number at the River Glade Sanitarium, for the treatment of the Indian wards of the Government.

Dr. Farris also announced that he expected the appointment of a nurse to do special public health work among the Indians in the Provinces of New Brunswick and Prince Edward Island.

The medical profession in New Brunswick wish to extend their sympathy to Dr. and Mrs. W. F. Roberts of Saint John, on the death of their son after a very short illness. Wm. Roberts, Jr., was at the time of his death a medical student at McGill University.

A recent arrival in Saint John was Dr. A. B. MacNaughton, of Montreal, who visited friends here on his return from a prolonged European study tour.

Dr. Murray MacLaren, C.M.G., M.P., is at present in Ottawa attending the session of parliament.

Dr. S. R. Jenkins, of Charlottetown, has been a recent visitor in Saint John.

Dr. O. B. Evans, of Saint John, is at present in Montreal.

Dr. G. A. B. Addy is holidaying in the southern States.

Dr. Arthur Melanson, the newly appointed Travelling Diagnostician for Tuberculosis, whose district will include the northern part of the province, is at present in Saint John, doing some special work at the Saint John County Hospital.

Dr. H. L. Abramson has returned to his duties as Provincial Pathologist, following an operation in the General Hospital at Saint John.

A. STANLEY KIRKLAND

QUEBEC

"When we compare the losses from tuberculosis, infant mortality, and from infectious diseases, suffered by the Province of Quebec, with those of other provinces, those who are entrusted with the safeguarding of public health are overwhelmed with the enormous effort that yet faces them." In these words Dr. Alphonse Lessard, Director of the Provincial Bureau of Health, sums up his exhaustive report which was tabled in the Legislature. He is thankful to be able to record a slight improvement in the lessening of infant mortality, and this he attributes directly to the educational work that has been carried on during the last few years. Those agencies which have worked assiduously, in the face of grave discouragements, to improve conditions will be gratified to learn that Dr. Lessard attributes the improvement in the general health and the lowering of the infant death rate directly to their efforts. The death-rate from infectious diseases, principally typhoid fever, diphtheria, measles, scarlet fever, and whooping-cough, is still far too high. These, as Dr. Lessard points out, are all preventable diseases. In some parts of the province typhoid fever is continually breaking out, and some villages not only have their five or ten

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deaths from this cause every year but they are also responsible for the deaths of others in neighbouring municipalities. In the face of the facts revealed by this report, and the straight talking indulged in by the Director, the citizens of this province will doubtless renew their appeals for more generous appropriations for health improvement. The Government has no right to indulge in extravagant programs of highway construction and for the erection of imposing offices, and the frills of modern government until it has reduced the record of deaths from preventable diseases among children to a much lower figure.

During 1928, a total of 6,863 patients were treated at the Women's General Hospital, according to the report read by Dr. H. L. Reddy, the Superintendent, at the recent annual meeting of the hospital. Nearly 60 per cent of the patients were public cases; 50 per cent being Protestants, 45 per cent Roman Catholics, and 5 per cent of other denominations. The cost per day per patient was $2.85. There were 533 confinements, with 5 deaths of mothers, all of which occurred in the private and semi-private services. Children admitted numbered 209. Fifty-three deaths, other than in confinement cases, occurred during the year, and of these 8 were in the hospital less than 24 hours, 5 less than 48 hours, and 7 died of cancer. Forty deaths occurred in infants born in hospital, out of a total of 533 births, and of these 15 were premature births and 16 were stillborn. Thirty-two radium treatments were given and 839 operations performed. The total number of patients treated in the out-patient department was 3,504.

The new student training centre at 4755 St. Hubert Street for students from the McGill School of Graduate Nurses, the Victorian Order of Nurses, the McGill School of Physical Education, and for doctors taking post-graduate work in the Department of Public Health at McGill as well as students of the McGill School for Social Workers, was opened recently. The new centre will be operated under the joint auspices of the Family Welfare and Child Welfare Associations, and students will come to the training centre for their field work.

Lachine, with a rate of 379.3 per thousand, leads the Province of Quebec in infantile mortality during the month of December, according to the vital statistics for the month issued recently. Victoriaville, with a rate of 333.3, was the next highest, and Valleyfield, with 280.0, was the third in line. Five places in the province showed a nought as regards infantile mortality during the month, these being Granby, Outremont, Westmount, Drummondville and La Tuque, while Rivière du Loup, Kenogami, and Montmagny each recorded but one death each. The city of Montreal had 234 cases of infantile mortality out of a total of 1,265 deaths, for a rate of 166.3, while the figures for the neighbourhood were: Lachine, 379.3; Outremont, 0; Verdun, 150; and Westmount 0.

Shawinigan, with a birth-rate of 70.2, led the province for the month of December, this contrasting with the average of 28.1; while Jonquières, with 56.4, was second; and Cap de la Madeleine, with 52.5, third. At the other end of the table, Westmount, with a birth-rate of 2.4, was the lowest in the province, followed by Outremont with 4.1. The next lowest was Levis, which had a birth-rate of 16.8. Montreal's rate was 23.2, comprising 1,407 births during the month.

In all there is a substantial increase of births over deaths for the month, 6,315 living births being recorded as against 3,948 deaths, among which were 845 cases of infantile mortality, for a general average of 133.8.

St. Jerome, with a rate of 35.2, stood highest in the death table; Thetford Mines, which had 28.7, second; and Magog with 27.1 third. Kenogami recorded a low death rate for the whole province of 4.3, there being but two deaths in that town during the last month of 1928.

The urban death-rate, both for general deaths and for infantile mortality, was higher than the rate for the rural areas. The latter had a higher birth-rate than the residents of cities and towns, for the rural births reached 3,502 during the month out of a total of 6,315, for a rate of 29.3, as against the 2,813 births recorded in cities and towns, for a rate of 26.6. As regards infantile mortality, the urban total was 456, a rate of 162.2, as against 389 for the rural sectors of the province, where the rate was only 111.1. The general death-rate was also higher in the cities and towns, reaching 2,067 there, for a rate of 19.5, as against 1,881 in the country districts, where the rate was only 15.8.

General increased efficiency and the addition of several new departments have resulted in placing the St. Justine Hospital at a higher level than ever before, and this has been recognized by the American College of Surgeons, which has placed the institution's name upon its list of approved hospitals. Extensions and improvements increased the hospital's accommodation considerably, with the result that 2,949 patients were treated for 78,419 hospital days. In this connection the dispensary filled 33,937 prescriptions, and 23,764 outdoor patients were treated. The community-service department dealt with 3,692 cases. Additions during the year were featured by the provision of an obstetrics division, which is valuable for the nurses undergoing training at the institution. A surgical ward and a medical department have also been added. Dr. A. Ferron, dean of the medical staff of the institution, and President of the Medical Board, paid tribute to the work of Dr. Wiseberg, chief interne and of Dr. J. C. Bernard, Medical Superintendent. In his report, Dr. Bernard noted the arrival of Dr. L. Gagné upon his staff. Dr. Gagné was previously attached to La Pitié Hospital in Paris, and the hospital was fortunate in having him with them in view of his expertness in radiology. A grant of $100,000 from the Provincial Government guaranteed several notes outstanding and a "Dollar Day" campaign, organized by Mesdames Rodolphe Bédard and Beaudry Leman, netted the hospital $20,616. The hospital's appeal to the Legislature of Quebec has been sympathetically received, and further aid from that quarter was expected at the coming session.

Dr. C. A. Porteous, Medical Superintendent, pointed out in his report at the thirty-ninth annual meeting of the Verdun Protestant Hospital that constructional changes, involving costly improvements, were effected last year to centralize the medical and administrative control. Both medical and administrative wants are being cared for in an ambitious program which calls for a continuation of the excellent work as carried on during the last year. The installation of a cold storage and ice-making apparatus, a complete new kitchen, dining rooms, a cafeteria system for serving meals, and new quarters for the junior medical staff are a few of the contemplated innovations. Dr. Porteous stated that when this work is finished the hospital will rank second to none in Canada in its ability to minister to, care for, and cure those with minds diseased. The chief requirements from a medical standpoint of the institution, now that the new constructional changes have been auspiciously started, are equipment for hydrotherapy and electrotherapy, as well as a bacteriological laboratory and a technician, and he hoped that the present year would see these matters accomplished facts.

The total number of persons under treatment for the year, was 1,074, or 26 fewer than the previous year; 229 patients were admitted and even this number shows

a decrease of 19 when compared with a year ago. One hundred and forty-five persons were discharged as not sufficiently cured to warrant their permanent release.

Discussing the Immigration Act in respect to deportations because of medical unfitness, Dr. Porteous declared that it is not unfair in its conception and its demands on the individual immigrant, either in its application to his body or his mind. Seven persons were deported because of the rigid specifications of this Act, but he emphasized the fact that it was a matter of good legislation, since Canada will reap the benefits of this preventive policy in the future. The medical service was carried on at a high level throughout the year, and despite the fact that no particularly new line of treatment was discovered for mental ailments in 1928, certain treatments that they have initiated are bringing most satisfactory results. He mentioned particularly their partial success in the past in the treatment of general paresis and tabo-paresis with tryparsamide, and the most satisfactory results obtained by the use of Dr. Bisgaard's treatment of dementia præcox by manganese chloride. He gratefully acknowledged the services of the hospital's consulting surgeon, Dr. W. L. Barlow, and the physicians of the consulting staff, Dr. F. G. Finley and Dr. A. H. Gordon, as well as Dr. W. W. Chipman, who were untiring in their response to the need of the institution. During the year 125 operations were successfully performed, and another branch of activity of the clinic was the practical instruction in psychiatry provided in the hospital for the final year medical students of McGill University. These consisted of a series of demonstrations and clinics given to groups of ten to fifteen throughout the academic year, the work being supervised by Dr. Porteous, with Drs. Slight and Menzies as assistants.

A substantial subsidy has recently been obtained from the Provincial Government, to increase the accommodation of the Lake Edward Sanatorium. The present accommodation is 100, and when the plans are completed this institute will have a total of over 200 beds. This extension was deemed advisable in view of the considerable number of applications which have had to be refused on account of the lack of space. It is gratifying to note that persons suffering from tuberculosis seek sanatorium treatment at a much earlier stage than previously, which permits of better results and more lasting effects. Only cases of pulmonary tuberculosis in a minimum or moderately advanced stage are admitted for treatment.

GEORGE HALL

ONTARIO

On February 8th the Porcupine District Medical Society held one of its regular meetings at Timmins. Dr. G. A. McLarty of Toronto gave an address on "The examination of the nervous system, with case reports illustrating points in diagnosis."

The Niagara Falls Medical Society met at the General Hospital on February 13th, when Dr. W. T. Connell of Queen's University, Kingston, gave a talk on "Arteriosclerosis and increased blood pressure."

On the evening of February 15th, the North Waterloo Medical Society met in the Kitchener and Waterloo Hospital at Kitchener. A very interesting address was given by Dr. Roscoe Graham, of Toronto, his subject being "The acute abdomen."

At a meeting of the Norfolk County Medical Society, held at Simcoe on February 25th, Dr. C. H. Hair, of Toronto, gave an address on "The diagnosis and significance of common genito-urinary infections."

The Lincoln County Medical Society met in St. Catharines on the evening of February 27th. Dr. J. H. Holbrook, the District Counseller, was present and gave an address on matters pertaining to the Ontario Medical Association. A very interesting scientific talk was given by Dr. L. R. Hess, of Hamilton.

On February 28th Dr. James W. Ross of Toronto addressed the members of the Brant County Medical Society in Brantford, on "Some characteristic types of abdominal pain."

The members of the Hamilton Medical Society are leaving no stone unturned to make the annual meeting of the Ontario Medical Association, which is to be held in Hamilton next May, one of the best meetings ever held by the Association. According to present indications there will be a record attendance at this meeting.

N. B. GWYN

On Monday, February 25, 1929, several members of the Highland Park Physicians' Club of Detroit visited London, Ontario, and were entertained by the Western Ontario Academy of Medicine. Clinics were held in Victoria Hospital from 9.30 a.m. until noon. A luncheon was given at the University of Western Ontario. The afternoon was spent at the Children's Hospital. In the evening, at the Medical School, the visitors were given an opportunity of viewing the Canti film, a cinematographic demonstration of cellular structure and activities and the effects of radium on living cells in tissue culture. This was made possible through the courtesy of the Canadian Medical Association.

E. M. WATSON

The next meeting of the Ontario Neuro-Psychiatric Association will be held at the Ontario Hospital, Orillia, on Friday, June 14th.

Papers will be read at the afternoon session and arrangements are being made for a dinner speaker.

G. C. KIDD

MANITOBA

Major G. W. Treleaven, D.S.O., M.C., R.C.A.M.C., delivered two lectures, on February 25th and 26th, at the Medical Arts Club Room, on "The medical examination of pilots for the air-services, both military and civil."

A very successful meeting, under the auspices of the Manitoba Branch of the American College of Surgeons, was held in Winnipeg on March 7th and 8th. A community health meeting, open to the public, attracted an audience of over two thousand, and the clinical and scientific sessions were well attended. Dr. H. P. H. Galloway presided and the speakers included Drs. Chas. L. Scudder, of Boston; Burton J. Lee, of New York; Alfred W. Adson, of Rochester, Minn.; Malcolm T. MacEachern and Bowman C. Crowell, of Chicago; and Mr. Robert Jolly, of Houston, Texas.

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It is announced that the Sanatorium Board has recommended to the provincial government a site on the south-east corner of the Manitoba Agricultural College grounds for the new sanatorium.

At the regular meeting of the Winnipeg Medical Society, on March 15th, the following program was presented: "Some points in the post-operative care of surgical patients," Dr. Jas. McKenty; "Obesity from the standpoint of the general practitioner," Dr. Chas. Hunter.

ROSS MITCHELL

SASKATCHEWAN

At the February staff meeting of the Regina Grey Nuns' Hospital Dr. J. B. Ritchie presented a case of gastric ulcer, Dr. L. Roy a case of pyloric stenosis, Dr. D. S. Johnstone a case of ruptured gastric ulcer, and Dr. U. Gareau a case of muscular dystrophy in a three-years old child.

Laryngeal diphtheria was the topic of discussion at the February staff meeting of the Regina General Hospital; four cases all terminating fatally were reported. The medical health officer stated that diphtheria was about five times as prevalent in the city this winter as last winter. Most of the cases occur in children of the pre-school age and in adults; very few of the cases are among school children.

Dr. Robert C. Riley who graduated from the University of Toronto in 1925, and who was formerly Pathologist at St. Joseph's Hospital, Hamilton, Ont., has been appointed pathologist to the Regina General Hospital.

Dr. S. R. D. Hewitt, who for the past four years has been physician-in-charge of the Heart Clinic of the Toronto Western Hospital, has been appointed Superintendent of the Regina General Hospital. Dr. Hewitt served four years overseas, has been in the service of the D.S.C.R. for nine years, during seven of which he was director of the Toronto area with supervision over five hospitals.

A delegation of the American College of Surgeons visited Regina in March. Clinics were held at both hospitals, scientific papers were presented in the afternoons, and a public meeting was held on one evening. The treatment of cancer was discussed, with reference to indications for the use of surgery and irradiation. A cancer committee of local men was formed, composed of the following members: Drs. F. C. Corbett, C. M. Henry, H. H. Mitchell, Beatie Martin, H. McLean, E. B. Alport, H. C. George, R. McAllister, R. C. Riley, E. A. McCusker, A. N. Hardy, H. L. Jakes, W. A. Harvie, D. C. Hart, J. V. Connell, and W. A. Dakin.

An appropriation of $300,000 was made at the last session of the Legislature for the purpose of building a School for the Deaf. Plans and specifications are now under way in the architect's branch of the Department of Public Works.

LILLIAN A. CHASE

BRITISH COLUMBIA

The American College of Surgeons held a sectional meeting in Vancouver on February 27th and 28th. This section comprised members in British Columbia, Washington and Oregon. Over two hundred Fellows of the College registered, and all were enthusiastic regarding the subjects delivered. Clinics were held at the Vancouver hospitals, and keen discussion followed each case. Dr. Burton J. Lee gave a clinic on cancer; Dr. Scudder on fractures; and Drs. R. E. McKechnie, F. P. Patterson and G. E. Seldon held operation clinics.

The following noted men were the guests of the Section, and delivered talks on their particular work: Dr. Bowman C. Crowell, Director of Clinical Research in the American College of Surgeons; Dr. Malcolm C. MacEachern, Director of Hospital Activities in the College; Dr. Alfred Adson, Neurological Surgeon of the Mayo Clinic; Dr. Burton J. Lee, Clinical Professor of Surgery, Cornell University; Rev. C. B. Moulinier, Director of the Catholic Hospital Association; Dr. Chas. Scudder, Harvard University; Dr. Coffery, of Portland; and Mr. Robert Jolly, Superintendent of the Baptist Hospital, Houston, Texas. The lectures given were of great interest and benefit, not only to the medical profession but in certain instances to the laity who were invited.

Dr. Lee pleaded for the formation of a diagnostic cancer clinic, and the interest he initiated is already showing signs of production.

W. L. GRAHAM

Dr. Appleby spoke at the January meeting of the Fraser Valley Medical Society, choosing "The investigation of gall-bladder disease" as his subject. In February, the monthly meeting was addressed by Drs. B. D. and G. E. Gillies, who gave "A symposium on peptic ulcer" dealing with this affection from both the medical and the surgical aspect.

It is proposed to change the meetings of this society to the first and third Tuesdays of the month, so that they will not coincide with the meetings of the Vancouver Medical Association. In spite of this, all recent meetings, clinical and regular, have been very well attended, and the papers given at the latter have been of uniformly high quality.

Considerable disappointment is being expressed that the findings of the Milk Commission appointed by the Provincial Government are not to be published. The Commission held sittings from January, 1928, to July of this year, and the data collected should be invaluable to all interests of the community. It will be a matter of regret if this information is not made available to libraries throughout the province.

Dr. P. M. Wilson, formerly of Lytton, has gone to Britannia Beach to take the place of Dr. G. A. Minorgan. Dr. Minorgan has voluntarily resigned his position with the company there, and is relieving Dr. G. K. MacNaughton, M.L.A., during the present session before deciding on a future location.

Dr. R. Elder is relieving Dr. Stringer on the hospital ship *Columbia*, while the latter undergoes an operation in Vancouver.

C. H. BASTIN

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XUM

GENERAL

Medical Reunion in Paris

The forthcoming Medical Reunion in Paris will extend from the 9th to the 14th of June. It will be organized with the co-operation of the *Révue Médicale Française* and its contributors, and will be open to all French and foreign physicians, and also to medical students.

The constitution of the Central Committee is as follows: *President:* Professor Delbet; *Vice-Presidents:* Professors Sergent and Desgrez; *General Organizer:* Professor Balthazard; *General Secretary:* Dr. Léon Tixier; *Assistant General Secretary:* M. Deval, Director of the Laboratory in the Faculty of Medicine; *Treasurer:* Dr. Léon Giroux, formerly Director of the Clinics in the Faculty of Medicine.

The meetings will be held in the Palais des Expositions, Paris (Porte de Vaugirard), where an exhibition will be organized under the auspices of the French Exhibition Committee, the arrangements for which will be superintended by M. Jean Faure, President of the Syndicate of Manufacturers of Pharmaceutical Products.

During the afternoon, various addresses will be given in the new hall of the Palais des Expositions, by Professors Delbet and Sergent, by Dr. Lesne, and others.

For the morning, a well-considered program has been drawn up, which provides for attendance at practical demonstrations with the assistance of the Directors of the various sections in the Clinics of the Faculty of Medicine, and in the public and private hospitals, the Poor Law Administration, Pasteur Institute, Radium Institute, etc.

The Entertainment Committee, presided over by Dr. Henri de Rothschild, has projected a particularly attractive program:

Sunday, June 9th: Official reception in the Palais des Expositions; orchestra, theatrical representation, refreshments.

Tuesday, June 11th: Evening at the opera.

Thursday, June 13th: Motor excursion to the Vallée de Chevreuse; lunch at Rambouillet; visit to the Châteaux of Rambouillet and Dampierre, to the Abbaye of Port-Royal des Champs; collation at the Abbaye des Vaux-de-Cernay.

Friday, June 14th: The visitors will be received at the various climatic, thermal, and seaside-health centres, under particularly agreeable and advantageous conditions.

A ladies' committee will organize daily visits to the large dressmaking establishments, museums, concerts, tea rooms, etc. It may already be said with certainty that the success of the Medical Reunion of 1929 will be even greater than that of preceding years, as the Committee has benefited by the experience of the past to introduce every possible improvement.

Subscription: 50 francs for those attending the reunion; 20 francs for ladies and medical students; payment by cheque.

For all particulars apply to Monsieur Léon Tixier, 18 Rue de Verneuil, Paris (7e).

This year, at Whitsuntide, a party of doctors and others will go on a tour of mediæval towns and spas in Germany. Among the places to be visited are Hildesheim, Goslar, Bad Harzburg, Schierke, Bad Sachsa, Weimar, Eisenach, Kissingen, Nuremberg, Rotenburg, Wurzburg, Heidelberg, Frankfurt, Bad Nauheim, Wiesbaden, Ems, Coblentz, and Cologne. The party is due to leave London on Tuesday, May 14th, and return on June 4th. The cost will be £45 12s., including all travelling expenses, meals, hotel charges, and gratuities. Wives or daughters of medical men joining the tour will be welcomed. Particulars may be had from Mr. Henry Baerlein (Bath Club, 34, Dover Street, London, W.1), who organized the enjoyable visits to Czechoslovakia and Jugoslavia in 1927 and 1928.

Medicine and Philately

The Egyptian Government has, in honour of the recent International Medical Congress held in Cairo, issued two postage stamps that have more than ordinary interest. The first, of the value of 5 millièmes, carries the image of Imhotep, the Egyptian God of Medicine, sitting on his throne, and grasping the sceptre of power in his right hand and the "ankh", or symbol of immortality, in his left. The second, of 10 millièmes, bears a portrait of the Viceroy Mohammed Ali Pasha, who founded the medical school of Cairo one hundred years ago.

Competent authorities are of the opinion that such a man as Imhotep actually existed and he is not a myth. Besides being a physician he was an architect, and was in great favour with the Pharoah Zoser. The oldest of the pyramids, that known as "the step pyramid," not far from Memphis, was designed by Imhotep. The first known physician, Imhotep is said to have lived about 4500 B.C. Such was his reputation that 2500 years after his death he had become a deity of medicine. He was known to the Greeks as Imouthes, and they identified him with their own Asklepios. A special temple was dedicated to him at Memphis and he had, also, one at Philæ. He probably has more claim to be regarded as the tutelary divinity of medicine than has Asklepios (Æsculapius). This is, probably, the first time in the history of medicine that the image of a medical man has appeared on a postage stamp.

Post-Graduate Facilities in Vienna

It seems to be not generally known that there exists in Vienna, Austria, the American Medical Association of Vienna, which is a well-developed organization that exists for the purpose of facilitating post-graduate work for English-speaking physicians. All the English medical courses given under the auspices of the University of Vienna are administered through this organization, which has an annual membership of nearly 1,000 physicians. The President just now is Ralph A. Reynolds, M.D.

For further information, address: The American Medical Association of Vienna, Vienna VIII. Alserstrasse 9, Austria.

Billroth Centenary

Medical men and women in all parts of the world will honour next month the memory of the great Austrian surgeon Theodore Billroth, who was born in April, 1829. The Medical Faculty of the University of Vienna, the Vienna Academy of Science, and the Medical Society of Vienna have united to organize special centenary celebrations on April 9th and 10th in the city where Billroth practised and taught from 1867 until his death in 1894, and it is expected that the medical profession and scientific associations of many foreign countries will be represented. The idea of holding centenary celebrations originated in the small circle of those in Vienna who studied under the pioneer of visceral surgery, but Billroth's disciples and admirers are to be found in the chairs of medicine and surgery of every country, and not only in Austria and Germany. Full particulars of the celebrations can be obtained from the Akademie der Wissenschaften in Wien (Universitaetsplatz 2, Vienna 1).

The Annals of Medical History

With the fourth issue of this admirable journal for 1928 the first series comes to an end. We note, however, with pleasure that the journal is to be continued, in spite of the fact that it has not paid for itself in the past. In its new form the pages of the *Annals* will be somewhat reduced in size, but the journal will appear six times in the year instead of quarterly. Every medical man who is interested in the historical development of his profession should subscribe to the *Annals of Medical History*. It makes delightful reading.

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Vit-Iodum Forte was discussed in the C.M.A.J. October, 1928, by Gilbert L. Adamson, M.D., and A. T. Cameron, D.Sc., F.R.S.C. By permission of the authors and the C.M.A.J. we are able to supply a reprint of this article to members of the Profession on request.

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Book Reviews

An Introduction to the History of Medicine, with Medical Chronology, Suggestions for Study and Bibliographical Data. Fielding H. Garrison, A.B., M.D., Lieut-Colonel Medical Corps, U.S. Army, etc. Fourth Edition, revised and enlarged. 996 pages, illustrated. Price $13.00. W. B. Saunders Co., Philadelphia and London. 1929.

It is satisfactory evidence of a growing interest in the study of the vicissitudes of the medical art from the earliest times to the present that this admirable treatise has reached a fourth edition. Moreover, as the author says, it has so expanded its bulk and increased its pages that further enlargement of the present format is not to be expected. We trust this means that Colonel Garrison intends to adopt a suggestion of some of his friends and in the near future give his reading public a complete history of medicine—the first in the English language. In such a work he would be able to include a broader account of some subjects which are accorded but a brief review in the volume before us, and a complete history of others that insufficient space now allows no more than a mere mention.

The introduction, beginning with prefatory references to ancient historic medicine and the early periods of Oriental healing, leads us through the intervening ages to our own times. Among the illuminating incidents in the story of primitive medicine we read of the quaint custom prevalent in Babylonia where, as Montaigne said, the whole people was the physican. The sick person was taken to the market place and there conferred with the passers by—especially with those that had "a disease exactly like yours." As a result of such consultations the patient was perhaps as well served as he would have been by the soothsayers or the priest, and at a smaller cost. Even if the advice or the prescription thus acquired was worth about what it cost, *i.e.*, nothing, it at least had the important element of profound conviction and was given by a class who never weaken its effect by admitting that "das geht ueber meine Begriffe."

Garrison then considers ancient Hebrew, Persian, Chinese and Japanese medicine that preceded the important Greek period—before, during and after Hippocrates—until the days of Galen and his elaboration of the humoral physiology and pathology. Next in line are the Byzantine, Mohammedan and late Jewish eras, which are given due notice.

The author's catalogue of the Ages of Medicine following mediæval times forms a useful mnemonic for the freshman student of the subject. Beginning with the Renaissance Period of the Revival of Learning—the sixteenth century, he follows with the seventeenth century, the Age of Individual Scientific Endeavour; the eighteenth century, the Age of Theories and Systems; the nineteenth century, the Beginnings of Organized Advancement of Science; the twentieth century, the Beginnings of Organized Preventive Medicine. Doubtless in choosing the last title our author had in mind the dictum of Schopenhauer: "Das Thor läuft den Genüssen des Lebens nach und sieht sich betrogen: der Weise vermeidet die Uebel." As a sort of postscript, the treatise then furnishes twenty important pages devoted to medicine in the World War and after.

The reader may profitably consult the appendices of this volume; for example, "Questions and Exercises" call for special notice; they constitute an epitome of the chief items of interest in medical history. Garrison's Chronology of Medicine and Public Hygiene occupies 70 pages and covers outstanding medical persons and events from 7000 B.C. to 1929 A.D.

The student should by no means pass by the appendix entitled "Hints on the Study of Medical History," and an equally valuable "Biographic Notes for Collateral Reading." In discussing the latter caption Garrison points out that in the ordinary medical curriculum the subject of medical history commonly goes a-begging, and gives us Osler's remedy for this regrettable state of affairs. However, it must be noted, and with some satisfaction, that North American colleges stand second on the list of those that have given historical medicine a place in their curricula.

It is the intention of this short critique to stimulate the appetite of the reader who has the smallest interest in the progress of his professional art for further browsing in these fascinating chapters that furnish such profitable pabulum as Colonel Garrison has set before us.

CASEY A. WOOD

William Harvey. Archibald Malloch, M.D. (McGill), M.R.C.P. (Lond.) XI and 103 pp. Ten plates and three text illustrations. Price, $1.50. Paul B. Hoeber, New York, 1929.

This charming little book is the outcome of a tercentenary address on Harvey delivered by the author before the Harvard Medical Society and the Boston Medical History Club, on April 24, 1928. Much has been written about Harvey in the past and Dr. Malloch does not pretend to bring forward anything new. He merely gives us a plain unvarnished tale, told in the delightful way that those who are familiar with his contribution to the Osler Memorial Volume would expect. Dr. Malloch, however, does bring out a new point, namely that Harvey's publisher, William Fitzer, of Frankfurt-am-Main, was an Englishman. The outstanding events in Harvey's life are given, both before and after the Padua interlude, with a brief critical analysis of the De Motu Cordis and the De Generatione Animalium. There is also a brief sketch of the studies on the movement of the blood that had taken place before Harvey's time. Many informative little side-lights in regard to Harvey's person and character are also introduced. The work presents a very pleasing appearance, and its perusal should have the effect, as its author hopes, of stimulating further reading on the fascinating subject of science and of the biographies of its great men.

A. G. NICHOLLS

Roentgenology: Its Early History, Basic Physical Principles, and the Protective Measures Necessary During its Employment. G. W. C. Kaye, O.B.E., M.A., D.Sc., etc. 157 pages, 49 illustrations. Paul B. Hoeber, Inc., New York, 1928.

This small brochure, which is dedicated to A. H. Pirie of the Royal Victoria Hospital, Montreal, is devoted to the story of the early workers whose labours led up to the discovery of the roentgen rays, and is well illustrated by photoengravings of the old paintings of many of them. Among them we notice portraits of Gilbert von Guericke, Boyle, Nollet, Faraday, and Maxwell Crookes.

The technical part of the book deals with recent advances and observations by Compton, Douane, and others, whose work on the total reflection of x-rays, and on refraction and diffraction, is explained in a manner that the average radiologist can appreciate without too deep mathematical calculation. It gathers together the essentials of the physics of x-rays as recently stated in scientific journals, and presents them in a form suitable for the radiologist. The book is complete and practical and should be in the hands of everyone making use of the roentgen ray.

A. D. BLACKADER

Modern X-ray Technique. Edward C. Jerman. 257 pages, illustrated. Price $5.00. Bruce Publishing Co., 2429 University Ave., St. Paul, 1928.

The author of this book has prepared a working manual for the technician in x-ray work. The qualifica-

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tions needed for a successful worker in this field, both from an educational and a physical standpoint are covered in full. This chapter might well be perused by anyone contemplating this line of endeavour as his life work. A brief history describes the development of x-ray apparatus, from the crude early appliances of the first workers up to the equipment of to-day. Following this the different electrical and mechanical units needed in the laboratory are discussed in detail.

The alternating and direct current type of x-ray transformers are fully discussed with the advantages and disadavantages of each enumerated in a manner easily understood by one with only slight knowledge of electrical phenomona. The use of the sphere gap, milliammeter, and volt meter in measuring the high tension current is well illustrated. The importance of these measurements in the calibration of an x-ray machine is also explained in a thorough manner. The importance of applying this calibration in the routine work, if x-ray films of excellent quality are to be obtained, is stressed and the necessity of knowing what is done and why it is done in each step of making an exposure is also demonstrated. Charts of regional technique are included in an elaborate and informing manner. Each region of anatomy is taken separately. A photograph of the patient is shown with the region and apparatus in proper position. A print of the x-ray film of the part is also shown. A table giving distances, voltages, milliamperes, and time for each region is also included. In this section many technicians will find the solution of some of their problems.

The book is written solely for the lay worker in the field of radiology and the technician reading it will no doubt be benefited and stimulated to do better work. While the specialist will find nothing new in the work, the general practitioner who is doing his own x-ray work may find the answer to some of his difficulties.

W. H. DICKSON

Text-Book of Surgical Diagnosis. By various authors. Edited by A. J. Walton, M.S., F.R.C.S., B.Sc., M.B. Vols. I and II. 1,121 pages, 570 illustrations. Price 63/- net. Edward Arnold & Co., London, W.1., 1928. Canadian Agents, Messrs. McAinsh & Co., Toronto.

Not in recent years has there appeared a work on surgical diagnosis which has borne in such large measure the imprimatur of excellence as does this two volume work by leading British surgeons. Under the capable editorship of Mr. A. J. Walton, of the London Hospital, there is here produced a text-book on surgical diagnosis which should remain for some years to come a standard work on this important branch of surgery. Mr. Walton is to be congratulated on his effort in producing a book which should be of great value to the general practitioner as well as to the surgeon. Thoroughness is the key-note throughout the various contributions by the thirty-two surgeons who have made this work what it is, so that it differs from the cut-and-dried texts of numerous volumes on surgical diagnosis, which contain much that is obsolete. It is thoroughly up to date and the accepted opinions of American, as well as of British, surgeons are included. There is but little overlapping in either volume and the whole work is exceptionally well balanced.

Mr. Walton states in his preface, "There is also a growing tendency to lay stress, and perhaps an undue stress, upon the value of laboratory and other special methods of investigation. The careful consideration of the clinical history, and the physical examination of the patient, which still remain the most valuable methods of diagnosis, and to which the other methods should be regarded merely as accessory, are thereby prone to be relegated to a secondary position. For this reason it was felt that there was a need for a text-book which would deal in a concise and practical manner with the difficulties of diagnosis of surgical lesions. In the compilement of this book I have been fortunate in obtaining the co-operation of men with wide reputations in each special branch of surgery, and to each contributor a free hand has been given in the writing of his article. It is thereby hoped that the volume will be of real service to the busy practitioner and surgeon, and will do something to enable them to keep abreast with the voluminous literature of modern surgery."

The list of collaborators which Mr. Walton has associated with him is an imposing one and contains the names of many surgeons of wide reputation.

It is a matter of difficulty in the case of volume one to select any one of the various contributions for special commendation, so thoroughly has each been completed. Special emphasis is placed on surgical anatomy and pathology, and due regard is given to the clinical evidences of each disease under discussion.

Of special value are the chapters on tumours and cysts of the skin and subcutaneous tissues, by J. H. Sequeira; acute infections of the heart, by A. B. Kanavel; the cardio-vascular system, by H. S. Souttar; injuries and diseases of the lymphatic glands and vessels, by E. R. Flint; injuries and diseases of nerves by Harry Platt; congenital and acquired deformities, by H. A. T. Fairbank; injuries of joints, by A. S. B. Bankart; injuries and diseases of the spinal cord, by Geoffrey Jefferson; diseases of the brain and skull, by George Riddock, and W. Russell Brain.

To volume two, Mr. A. J. Walton contributes extensively, and his illuminating chapters on diseases of the liver, gall-bladder and bile-ducts, on lesions of the stomach and duodenum, and on injuries and diseases of the pancreas are of special merit. His wide reputation in the realm of abdominal, and in gastro-duodenal surgery in particular, makes his articles of much value.

Sir Lenthal Cheatle, an authority on diseases of the breast, gives an extensive chapter on this subject, in which he expounds at length his well-known views on desquamative epithelial hyperplasia and dysgenetic epithelial hyperplasia. He writes in no uncertain terms regarding early diagnosis of carcinoma of the breast, as he remarks, "A dire responsibility rests on the shoulders of a man who decides to adopt a waiting policy in order to clear up a diagnosis. There is no doubt that a waiting policy may clear up a diagnosis and render plain the nature of the malady; when the malady has clearly shown itself to be carcinoma, it has probably passed from the operable into an inoperable state so far as cure can be concerned, and the flagrant appearance of the disease is usually the herald of a fatal termination."

Among the other notable chapters of volume two are those by G. Gordon Taylor and R. V. Hudson, on lesions of the intestines; by W. S. Perrin, on hernia; by J. P. Lockhart-Mummery, on diseases of the rectum and anus; by Sydney G. Macdonald, on diseases of the kidney, ureter, bladder, prostate and vesicles.

The volumes are printed in excellent type and the illustrations are numerous, and, with few exceptions, good.

This text-book on surgical diagnosis can be heartily recommended as a treatise which contains the best of our present day knowledge in the art of elucidating surgical lesions.

G. E. LEARMONTH

Text-Book of Surgery. W. Wayne Babcock, A.M., M.D., F.A.C.S. 1367 pages, 1050 illustrations. Price $11.00. London and Philadelphia, W. B. Saunders Co., Canadian Agents, McAinsh & Co., Toronto, 1928.

This work represents a single volume text-book of surgery, including orthopædics, proctology, urology, and venereal diseases, and omitting the more highly developed specialties, such as ophthalmology, otorhinology, and gynæcology. The subject matter is brought forward in a very easy style, and does not seem unduly condensed, in spite of the ground covered in such a comparatively small space. One finds in this book a dogmatic statement of what the author believes to be true for

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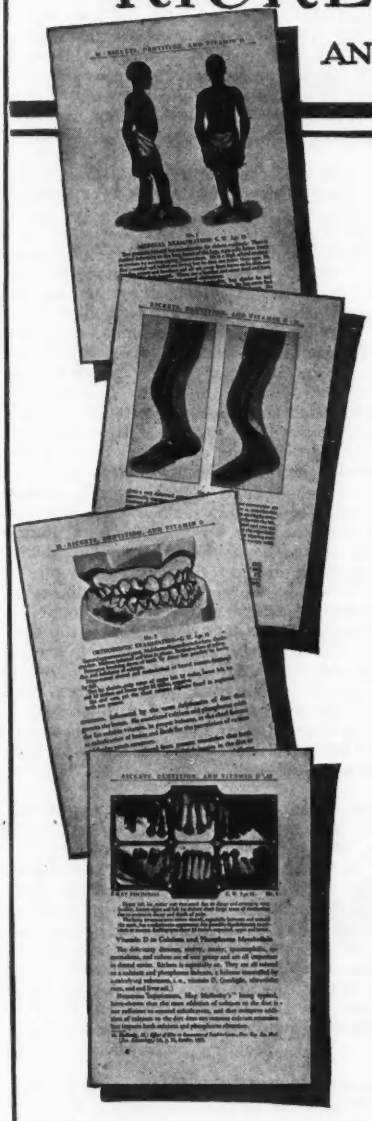

As early as the 17th century, Glissom associated rickets with delayed dentition, yet it has only been within recent years that investigators have been disposed to accept a common etiology for rickets and derangements in tooth structure and eruption.

This was doubtless due to the different modes of treatment prevailing between dentistry and medicine. However, extended research repeatedly produced clinical evidence that rickets and faulty dentition were concomitant.

Each came to be recognized as the end result of unbalanced metabolism—a nutritional deficiency—produced from lack of proper deposition of calcium and phosphorus in the skeletal structure of the child.

A forward step was thus achieved when the teeth were definitely regarded as part of the bony structure by both professions. It advanced sharply as the etiology and pathology became understood and knowledge was diffused.

In the light of modern research the relation of rickets to delayed dentition, malocclusion, hypoplasia, dental caries, and odontoclasia is too intimate to warrant a separation when a discussion of either subject is undertaken.

Investigations have by now clearly established the interdependence of physician and dentist in the prevention, treatment and cure of these conditions. A review of the literature in Rickets, Dentition, and Vitamin D has been made in this booklet to organize the findings of general research as related to their respective practices.

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present day surgical practice, broadly and comprehensively stated.

I have no hesitation in recommending this as a standard text-book in surgery to students, or as a reference book to the surgeon. The ground work of theory and science is well covered, and the details of technique are sufficiently extensive to be of value to both.

O. S. WAUGH

Diabetic Surgery. Leland S. McKittrick, M.D., F.A.C.S., and Howard F. Root, M.D. 269 pages, illustrated. Price $4.25 net. Lea & Febiger, Philadelphia, 1928.

"Insulin has placed a new responsibility upon the surgeon." Thus opens the preface to the volume under review, and it may be said at once that a knowledge of the contents of this book will enable a surgeon to discharge his new responsibilities adequately.

The subject is treated most thoroughly, so that it is difficult to say whether one admires more the setting forth of the metabolic handicaps of the diabetic and their control, or the clear statement of advice as to procedure in regard to anæsthesia, the type of operation, and the after care of the patient.

Perhaps the first part of the book will be appreciated most. It concerns itself with the incidence of surgical complications in diabetes, the special risks run by the diabetic undergoing an operation, and the medical problems confronting the surgeon before operation can be embarked upon. These questions are considered clearly, thoroughly, and pre-eminently practically. So good is the material that any surgeon reading it must feel the weight of the responsibility that the care of a diabetic imposes, and he will feel too that here is a trustworthy guide to his diagnosis and treatment. Diabetic gangrene is given that proportion of the total space that its importance deserves, and the etiology and pathology of this complication are well summarized. The details of operative procedure touch on points on which surgeons' opinions differ. For instance, the authors advocate warmly the Gritti-Stokes amputation for suitable cases. Other surgeons will prefer amputation through the lower third of the thigh. The volume is an essential part of the library of any surgeon who may be called upon to take charge of a diabetic case. W. E. M. MITCHELL

Pediatrics for the General Practitioner. Harry Monroe McClanahan, A.M., M.D., Professor of Pediatrics Emeritus, University of Nebraska. 606 pages, 230 illustrations. Price $7.00. J. B. Lippincott Co., 201 Unity Bldg., Montreal, 1929.

This book of over six hundred pages has obviously been written by a man of extensive practical experience who has taught a great deal. The whole range of pædiatrics is covered in a way which, from one point of view, might be described as superficial. The author, however, has apparently, quite deliberately withheld all material which would not be of direct interest and use to the general practitioner. It is essentially a book for the practitioner rather than the student. The author's own conception of the disorders described has been enriched by copious references to the work of others. This is especially noted in the chapter on "Congenital anomalies," in which he quotes extensively from Ballantyne, in order to give the reader some idea as to their origin.

The chapter on "Nervous diseases" is almost meagre, but, again, the author is writing for the man who sees only a few of such cases, and desires only the outstanding facts plainly set forth.

The chapter on "Curative agents" is not the least useful for the practitioner. Here is described the technique for almost every form of treatment, from the preparation and application of a mustard plaster to the performance of a lumbar puncture. The whole book is essentially practical. The student who wishes further information on any of the topics discussed will find a most extensive reference list at the end of each chapter.

G. R. PIRIE

Recent Advances in Diseases of Children. Wilfred J. Pearson, D.S.O., M.C., D.M., F.R.C.P., and W. G. Wyllie, M.D., M.R.C.P. 593 pages, 50 illustrations. Price $4.50. The Macmillan Co. of Canada, Toronto, 1928.

This book is more of a text-book than a resumé of the recent advances in pædiatrics. An unusual feature is the introductory chapter, in which the authors set out to discuss clinical methods in a philosophical way. This is in itself admirable. The tendency of this age to depend so largely on apparatus and so-called "exact methods", to elicit and evaluate clinical evidence, is interfering with our larger conception of disease. However, the authors do not seem to have adopted the calm, dispassionate, detached point of view in their considerations, which is so essential to a truly philosophical attitude.

They immediately set out to divide all diseases into two divisions; the hypocalcic or alkaline type, and the hypercalcic or acid type. They give a long list of the characteristics of these two types. At the outset of a philosophical discussion of clinical evidence this seems a most arbitrary and unwarranted position to take, especially when the particular evidence they adduce is so inexact and unconvincing. Later in the book they undertake to show that practically all anæmias, congenital and acquired, leukæmias and purpura, arise from a disturbance of the lymphatic part of the hæmatopoietic system. Again the evidence is quite unconvincing. Academic discussions such as these are certainly of value. The theories are beautiful, if utopian. It would seem, however, that their presentation should not be in a text-book but rather in a journal or before a medical society.

Practically the whole field of pædiatrics is covered, in a somewhat terse and summary manner. The divisions of the text are clear, and the headings in quite distinctive type. Most of the newer ideas are noted, though one looked in vain for any reference to such topics as alkalosis, or the newer conception and treatment of bronchiectasis and pulmonary abscess. Outside of the more or less academic discussions noted above, the work conforms to the usual text-book type. It is well written, though one is jarred occasionally by the misuse of words such as "tubercular". The book has a distinct value for the practitioner who wishes to find the essential symptoms and characteristics of the various disorders of children clearly and briefly defined, and the main indications for treatment outlined. G. R. PIRIE

The Infant and Young Child. John Lovett Morse, A.M., M.D., Edwin T. Wyman, M.D., and Lewis Webb Hill, M.D. Second edition. 299 pages, illustrated. Price $2.00. London and Philadelphia, W. B. Saunders Co.; Toronto, McAinsh & Co., 1929.

This manual for mothers, on the care and feeding of the infant and young child from birth until school age, has been revised and brought up to date by the inclusion of new sections on milk modification, green vegetables, poor appetite, sunshine, ultra-violet light, and rickets. It deals in a sane and practical manner with the many problems encountered by the average mother.

F. F. TISDALL

Clinical Observations on Infant Feeding and Nutrition. Howard B. Gladstone, M.D. 118 pages, illustrated. Price 7/6 net. William Heinemann, Ltd., London, 1928.

The author states in his introduction that, as a general practitioner with a large experience in baby welfare work in England, he has tried to present the results of this experience to those in general practice, to welfare workers, nurses, and mothers, in as practical a way as possible.

Part 1 concerns clinical observations, covering overfeeding, underfeeding, principles of infant nutrition, and a lengthy discussion of the various prepared baby foods on the British market. The addition of cream and lim-

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water to modified milk mixtures is advocated in the preparation of humanized fresh milk mixtures. The use of cereals, broths, and egg yolk is not recommended until the fourth quarter of the first year. Calomel, with salol and bismuth, are recommended in the therapy of infective colitis and cholera infantum. Whey and lime water, with the gradual addition of peptonized milk, as in the case of premature infants, are recommended for the feeding of atrophic infants. Quinine, one-quarter grain every three hours, is stated to be the best cure for influenza and coryza. A chapter is devoted to the hygiene of infancy and vitamins.

Though perhaps suitable for the use of practitioners in England, where the fresh milk supply is possibly unsatisfactory, the volume contains little to recommend it as a guide to the Canadian physician or to the lay public.

R. R. STRUTHERS

Essentials of Infant Feeding. E. A. Barton, L.R.C.P., M.R.C.S. Second edition. 79 pages. Price 3/6 net. H. K. Lewis & Co., London, 1929.

This little book of seventy-nine pages gives many of the principles of infant feeding. It is written clearly and concisely and can be recommended to those who want, as the author himself states, "the mere outlines of a large subject in a space convenient in size and small in cost."

F. F. TISDALL

Recent Advances in Hæmatology. A. Piney, M.D., Ch.B., M.R.C.P. Second edition. 318 pages, 22 illustrations. Price $3.75. Macmillan Co. of Canada, Toronto, 1928.

The author introduces this comprehensive review of the subject of hæmatology by citing present day views of the histology and physiopathology of the reticulo-endothelial system, and of the embryology of the various cellular elements of the blood. To the monophyletic, the polyphyletic, and the dualistic views of the origin of blood cells is added a fourth, which might be called the Piney view. This last postulates the formation of all types of blood cells from reticulo-endothelium which arises from a primitive mesenchyme cell. The myeloblast is the precursor of both the granulocyte and the monocyte; the lymphoblast gives rise to the lymphocyte and the normoblast the mature red cell. The megaloblast is regarded as a separate cell type derived from entoderm and, contrary to popular belief, is believed to have no representative in normal post-natal life.

In dealing with the subject of leukæmia, the author favours the neoplastic theory of its etiology. He would classify tumours of the blood-forming organs under the general heading "hæmoblastosis," divisible into three main types of neoplasms: (1) the leucoses—acute and chronic myeloses and lymphadenoses; (2) erythrosis or erythræmia—Vaquez's disease; (3) reticulo-endotheliosis, which like the leucoses may be leukæmic (monocytic leukæmia) or aleukæmic (Hodgkin's disease). Myelomata represent the relatively benign type of neoplasm in contra-distinction to the hæmoblastoses or malignant growths. The author offers no solution of the interesting problem of why one neoplasm is leukæmic and another aleukæmic.

As regards prognosis, the expectation of life in cases suitably treated by means of x-rays and benzol is said not to be increased, though the period of efficiency will be greater in the treated cases. Artificial infection of leukæmic patients with tertian malaria has been tried without success.

The subject of pernicious anæmia is discussed with special reference to the etiology of the disease. The author emphasizes the rather unusual view that pernicious anæmia requires for its development the persistence of an embryonic "Anlage" of megaloblastic tissue from which the disease may develop under the influence of some nonspecific stimulation, such as intestinal or oral infection. Rarely the constitutional anomaly alone may be sufficient, if the hæmatopoietic tissues which are primarily ill-formed wear out during the normal length of life. This view, naturally, is a necessary corollary to the author's views on erythropoiesis, already expressed. To explain the cord symptoms, so common in the disease, the author assumes a spinal abiotrophy in the sense used by Gowers, that is, defective formation causing abnormally low vitality insufficient to last for a normal life time or to resist disadvantageous circumstances. The achlorhydria is also a constitutional anomaly. Pernicious anæmia is thus a simple secondary type of anæmia occurring in persons with certain constitutional anomalies of the nervous system, the gastric mucosa, and the hæmatopoietic system.

One of the most interesting chapters in the book deals with leukæmoid blood pictures. The various methods of estimating and classifying immature leucocytes occurring in conditions other than the hæmoblastoses is discussed. The recognition and enumeration of slightly immature leucocytes, as in the Arneth, Cooke, and Schilling indices, is often of prognostic value in infections. By means of these, great stimulation or exhaustion of the marrow may be determined, even in the presence of a normal numerical count.

In dealing with hæmorrhagic diathesis, two recent and interesting observations in regard to the treatment of Werlhof's disease are reported. The one is Van Goidsenhoven's observation that ligation of the splenic artery alone is a safe and efficient procedure in essential thrombopenic purpura. The other is that intramuscular injections of foreign protein, such as milk, will elevate temporarily the platelet level in this disease. Both these procedures would seem to be of value at least as temporary measures in the treatment of severe cases of essential thrombocytopenia.

Finally the author reviews the blood changes in a large number of diseases ranging from hydrophobia to beri-beri. This is not the least interesting part of the book.

The volume is a most valuable reference work, containing, in addition to the chapters already mentioned, a splendid appendix dealing with hæmatological technique. After reading the book one is perhaps left with the feeling that the author has overemphasized his own observations and conclusions in a text-book which aims at being a review of the subject rather than a monograph.

E. S. MILLS

Elementary Pathological Histology. W. G. Barnard. 80 pages, 176 illustrations. Price 7/6. H. K. Lewis & Co., 136 Gower Street, London W.C. 1, England.

This work, as its title indicates, deals with elementary pathological histology. The subject is covered in a concise but thorough manner, dealing with the various changes that occur in diseased tissues in the usual sequence. There is first a short account of the process of inflammation in general. Then follow examples of this, such as occur in pneumonia, pleurisy, tuberculosis, syphilis, etc. Then follow the regenerations and the degenerations, and the book finishes with the various tumour formations. The work is really an atlas, each microphotograph having a short text describing the condition depicted and drawing attention to the outstanding facts. The pictures are exceedingly clear. The book should fill a very definite need as a reference work, supplementing the regular course of lectures and laboratory work of the student. There is just a danger that the student may attempt to use the illustrations rather than his microscope to arrive at an understanding of the various conditions. The whole work is beautifully published.

A. T. MCCALLA

Serum Diagnosis by Complement-Fixation. John A. Kolmer, M.S., M.D. 583 pages, 65 engravings. Price $7.00 net. Lea & Febiger, Philadelphia, 1928.

Professor Kolmer has summarized investigations

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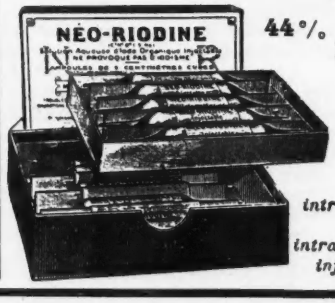

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which he has initiated and directed during the past nine years in serum diagnosis by complement fixation, and incidentally reviewed a large amount of the literature which has appeared on the Wassermann reaction. The book is divided into four parts, and the first two are devoted to a discussion of underlying principles and principles of technique. Every factor which is involved is considered in detail and no one can read this part of the book without realizing the immense amount of work that Dr. Kolmer has accomplished. Part 3 is devoted to a detailed account of the technique evolved by Dr. Kolmer as a result of his investigations, and the last part of the book deals with the practical applications of methods of serum diagnosis, including the identification of blood and seminal stains, and the detection of meat and milk adulterations.

Dr. Kolmer is to be congratulated on the publication of this work in one volume. His book will become a classic in the diagnostic field of medicine. No laboratory can afford to be without it, and it should be found in every medical library. Although the claim is made that the book has been prepared especially for practising physicians and veterinarians—and its clarity of style does not belie this claim—it would seem impossible for the clinician to assimilate thoroughly such a mass of detail. It is therefore to the pathologist and laboratory technician that the book will make its chief appeal and to them its appeal is irresistible. W. P. WALKER

Organic Laboratory Methods. Professor Lassar-Cohn (the late). Authorized translation from the general part of the Fifth Revised Edition by Ralph E. Oesper. 469 pages, illustrated. Price $6.50. Williams & Wilkins Co., Baltimore, 1928.

This is a translation of the general part of the fifth edition of a German work which probably most organic chemists have kept within convenient reach for many years. It consists chiefly of detailed discussion of the technical procedures employed in organic chemistry such as distillation, dialysis, decolourizing and clarifying, filtration, crystallization, solvents, molecular weight determination, etc., and in addition, permeating the work, mention is made of the innumerable special devices which organic chemists are wont to employ in the solution of their difficulties.

The enormous amount of information contained within it makes it impossible to prepare an adequate brief review. The book is well printed and illustrated and contains numerous references. It would be difficult to overrate its value for the place it fills.

R. L. STEHLE

A Practical Medical Dictionary. Thomas Lathrop Stedman, A.M., M.D. Tenth edition revised. 1194, pages, illustrated. Price $7.50. William Wood & Co., New York, 1928.

If one wishes a medical dictionary that includes all the accepted medical terms of the day, that is well printed on good paper, that opens with ease, is well illustrated, and in every physical particular is convenient to handle and pleasant to look upon, then it is hard to see how the present edition of Stedman's Medical Dictionary can be otherwise than heartily recommended. If, in addition to these virtues, one wishes to have a dictionary that shall be the final court of appeal in the spelling of medical terms, it is even more difficult to see how such a book can ever be produced, even if it would ever be entirely welcome.

Dr. Stedman has done well to include the preface to the first edition. He lets us into the workings of his mind with regard to the spelling and definition of words, and says things with which anyone who is interested in the intelligent use of our language will readily agree: such, for instance, as the criticism of the tendency to combine Greek and Latin roots in the formation of such terms as "ovariotomy" or "appendectomy". We question, however, his, or anyone else's, ability to bring into current use the more correct but much less familiar terms of "oötheocotomy" or "scolecoidectomy."

In the elimination of the diphthong "æ", however, he goes a little farther than we care to go. It is quite true that some words of Greek origin have come to be spelt without the diphthong which recalls their origin: "ether," for example, and "pedantic"; "museum"; "phenol," *etc.*, but this is no convincing reason why this shortening process should be applied in such a wholesale manner as one finds in this and other American dictionaries. There is some consolation, however, in the fact that language is peculiarly resistant to the onslaughts of any one reformer or group of reformers. We, in Canada, prefer to alter the spelling of our mother tongue only when it is quite apparent that the current usage has definitely approved of the change.

H. E. MACDERMOT

Conditioned Reflexes; an Investigation of the Physiological Activity of the Cerebral Cortex. I. P. Pavlov. Translated from the Russian by G. V. Anrep. Oxford University Press, 1927.

A year ago appeared this most remarkable book, a short review of which may be added to the review of Lectures on Conditioned Reflexes, translated by W. H. Gantt, since the one book supplements the other.

In the "Conditioned Reflexes" Pavlov gives a systematic review of the physiology of the cerebral hemispheres studied in his laboratories by means of the method of salivary oenditioned reflexes on dogs. The method used by Pavlov and his associates is a purely objective one. All phenomena observed in animals and expressed in their salivary and motor reactions are interpreted in terms of physiology. In a short notice it is impossible to discuss the enormous experimental material collected on the pages of this classical work. Every chapter gives an account of new data, from which in many cases new theoretical conceptions are evolved. The chief problems discussed by Pavlov are as follows: the development of conditioned reflexes; the different kinds of inhibition of conditioned reflexes; the analysing and synthetizing activities of the cerebral hemispheres; the irradiation and concentration of nervous processes in the cerebral cortex; mutual induction of excitation and inhibition; the cortex as a mosaic of function; sleep and hypnotic stage; pathological disturbances of the cortex (experiments with the extirpation of different parts of the cortex); application to man of experimental results obtained with animals.

On the whole, Pavlov's work is the first real physiology of the cerebral hemispheres. It is impossible now to realize and to predict what influence this book will have, not only on physiology and psychology, but on pedagogics and sociology. B. BABKIN

Lectures on Conditioned Reflexes. Prof. Ivan P. Pavlov, M.D. Translated by W. Horsley Gantt, M.D., B.Sc., and others. 414 pages, illustrated. Price $6.50. International Publishers, New York, 1928.

The publication in book form of Pavlov's lectures on this subject provides a necessary supplement to the already well-known "Conditioned Reflexes" by the same author and translated by Dr. Anrep. These lectures are of interest from the historical standpoint as they show the development of the present position of the problems of cerebral physiology as worked out by one line of investigation. The genius of Pavlov shines through these pages and one can see and admire that vivid scientific imagination which rising above mere facts uses them to forge new methods of approach to still more difficult problems. The greatness of the man is seen in the way he has succeeded in keeping his problems entirely on a physiological level, using no terms in an explanation of phenomena which have not a precise physiological meaning.

This is a book which should be read by every person interested in physiological or psychological problems.

J. BEATTIE